THE

WATER GAS CORRESPONDENCE.

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REPRINTED FROM THE

NORTH AMERICAN AND UNITED STATES GAZETTE.

WITH A

PRELIMINARY LETTER,

ADDRESSED TO

EDWARD H. TROTTER, Esq.,

PRESIDENT OF THE BOARD OF TRUSTEES OF THE CITY GAS WORKS.

PHILADELPHIA:
COLLINS, PRINTER, 705 JAYNE STREET.
1860.

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THE WATER GAS CORRESPONDENCE.

PRELIMINARY LETTER.

E. H. Trotter, Esq.,
President of the Board of Trustees of the City Gas Works.

Sir: Herewith we beg to hand you, in a connected form, the whole of the recent correspondence between your Chief Engineer, Professor Cresson, and ourselves, in reference to the Sanders process for making illuminating gas, respectfully inviting you to its careful perusal, as well as to a study of the following brief statement of facts that have transpired in the period that has elapsed since the date of our closing letter.

In that of the Professor, here given at page 46, he announced to the world the existence of a "fixed purpose to lay open to the light of truth, as occasion might require, every attempt to mislead the public mind" in reference to the effort to obtain cheap light by means of the process of Dr. Sanders; and yet, from that time to the present he has remained as silent as the grave—no single line having since been published for which he has made himself responsible to the people he had so long misled. Why has he been thus silent? Has it been that the "occasion" has not been given him? Could he find in the certificate of Mr. Eells, in reference to the attempt at black mailing Dr. Sanders and his friends, no "attempt to mislead the public mind," sufficient to warrant him in again appearing before the public? Did he discover no such "occasion" when he read the letter of his son giving so direct a contradiction to all that he had said of the introduction of the Sanders process at the city works? Could none be found in the letters of his son's attorney in reference to the effort at compelling "Moore and the others" to pay to that son the enormous amount of $500,000 for a useless patent? Has not each and every statement that had then been published been since affirmed and reaffirmed, accompanied by most conclusive evidence of its perfect

truth? Assuredly it has, until at length the whole has taken form in the following clear, distinct, and unmistakable charges of serious misconduct in his capacity of citizen, as well as in that of Chief Engineer of the works submitted to the direction of the Board at whose head, Mr. President, you have been placed:—

I. That, having undertaken the office of referee, he has wholly failed to perform its duties, the parties to the reference having never yet obtained the information required for enabling them to understand their respective rights and duties:

II. That he has spared no effort to prevent them from obtaining elsewhere the information that he himself has refused to furnish:

III. That he has been prompted to this course of action by motives of the most discreditable kind:

IV. That while engaged in destroying the value of the property of one of the parties to the reference, he has assailed the characters of members of the other party—making charges against them that he knew to be destitute of even the shadow of foundation:

V. That, for the accomplishment of highly discreditable objects, he has published numerous statements that are wholly devoid of truth:

VI. That he has made "unreliable" reports to his employers—doing this with a view to promote his own private interests and those of his family and friends: and finally,

VII. That his conduct, throughout this transaction, has been such as is utterly unworthy of any person claiming to be recognized as a man of honor and a gentleman.

Such, Mr. President, are the charges now recorded against Professor Cresson. Their publication was accompanied by an invitation to him at once to meet us before eminent and impartial citizens fully authorized to hear and judge of the evidence that might be adduced on either side—to decide the questions on which we were at issue—and to determine both the mode and the manner of reparation to be made. Here, certainly, was the "occasion," so much desired, for laying "open to the light of truth" the "attempts" which, as he had charged, had been made "to mislead and abuse the public mind" by "fallacious estimates of the cost of producing gas from water"—but, has he profited of it? Has he dared to accept the fair and liberal offer so promptly made? Has he not, on the contrary, shrunk from investigation, thereby permitting judgment to go against him, in reference to each and every charge that had

been preferred? That he has done this, you, Mr. President, know as well as we can do.

Conclusive as is the evidence that he himself has thus supplied, further confirmation has since been furnished, the Girard House having since been lighted up—and the lighting having been continued during many weeks, to the entire satisfaction of its worthy and public spirited proprietors, as is shown by the following letter:—

GIRARD HOUSE, CHESTNUT ST.,
Philada., Sept. 29, 1860.

DEAR SIR: We have used the Water Gas, made on our premises, under the patent of Prof. J. Milton Sanders, for several weeks, and find that the mode of manufacture is simple and practicable. The usual employés of our establishment are perfectly able to manage it, with some instruction at the outset.

The quality of the light is excellent, and perfectly reliable, while the cost of its production compared with the price of coal gas, is economical.

Yours, respectfully,
PRESBURY, SYKES & CO.

TO HENRY C. CAREY, ESQ., *President.*

As you see, Mr. President, the disease of "unreliability," invented after the refusal of "Moore and the others" to be black mailed to the extent of $150,000, disappeared so soon as the patient had escaped from the Professor's hands. That it had so disappeared, he could readily have satisfied himself; and yet, at the very moment that the Girard House was furnishing evidence of the perfect accuracy of all the claims that had been made in behalf of the process of Dr. Sanders, he himself, through the journal of which he is chief director, was assuring its readers that "the Sanders patent" had "just exploded here, after a temporary notoriety obtained by means similar in character" to some of those now so commonly used for popularizing visionary schemes in France!* Such an assertion as this, made under then existing circumstances, and coming from any other quarter, would have appeared extraordinary, but knowing, as we do, that it is but the first step in man's downward progress that is difficult, we need be surprised at nothing coming from Professor Cresson, after having read the conflicting statements of his son and himself above referred to.†

Of all the questions that have been raised between the Professor and

* Journal of the Franklin Institute, Aug. 1860, p. 119. Nominally, Professor Cresson is not the editor of this journal, but it is well known to be merely the echo of his opinions.

† See page 42.

ourselves, that of veracity included, there remains but one that is yet unsettled, and that has reference to the cost of producing the several kinds of gas made from coal, water, and wood. Anxious to prove that this latter, *made with the Cresson retort*, was cheaper than any other, he furnished to the Gas Committee of Councils, the figures upon which was based the assertion that water gas was more costly than any other, quoted by us in the opening letter of this correspondence. That those statements must have been utterly untrue—that they had been concocted with a view to promote the private interests of Professor Cresson and his friends—that in giving them he was knowingly and wilfully deceiving his employers—and that he was thus furnishing evidence of his entire unfitness for the place in which he is even yet maintained—we hold ourselves prepared to prove, whensoever and wheresoever, Mr. President, your Board shall furnish us with copies of the figures that were then supplied. That you will see the propriety, if not even the necessity, for doing this, we cannot for a moment question. Unlike the Professor, you can have no interests adverse to a full and fair examination of all the questions that have been raised between him and,

Yours respectfully,

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY,
Monday, Oct. 8, 1860.

ERRATA.

Page 21, line 2, *for* "larger" *read* "large."
" 37, *for* "withdrawn even for a moment" *read* "withdrawn" even for a moment.

THE WATER-GAS QUESTION.

THE WATER-GAS QUESTION.

TO THE PUBLIC.

THE undersigned, a Committee of the Keystone Gas Company, desire to ask your attention to the following statement of facts in reference to a recent report made by the Gas Committee of the City Councils.

In February last, Councils passed a resolution instructing that Committee to "inquire and report whether the manufacture of gas can be made out of any other material than that now used at the Philadelphia Gas Works, and if so, whether it can be manufactured at a cheaper rate, and whether it may be capable of producing a greater degree of light, and what would be the estimated cost to alter the works or apparatus to produce such gas, and also to report any other items connected with this subject that may be considered important."

Immediately thereafter a letter was addressed to the Chairman of the Committee, Mr. W. R. Wister, by the President of this Company, offering to meet them, and to lay before them all the information required for ascertaining the actual cost of the Water Gas of Dr. Sanders. To that letter no reply was made; but at a casual meeting some days subsequently, Mr. Wister gave our President the assurance that the Company should have "fair play," receiving in reply the counter assurance that nothing more was asked. Some weeks later (April 10th), two of the members of this Committee met the Gas Committee, and then offered to unite with them in the appointment of two persons, to be charged with superintending the lighting of the Girard House, and reporting upon the quality of the gas, its cost, &c. That offer was made without consultation with the proprietors of the House, but in the full confidence that they would not object to permitting their private works to be used for the promotion of great public objects. It was accepted, and we were assured that application should at once be made to the City Councils for a small appropriation to enable their Committee to pay a scientific superintendent to make report. No such application, however, was made, nor was any explanation of the cause of failure furnished, until yesterday, when a note from the Chairman advised us that the resolutions had been reconsidered and rejected. Why the Committee should have thus preferred to exclude the light that had been offered, we are quite unable to conjecture.

Anxious, on that occasion, to furnish proof conclusive of the entire confidence of the Company in its ability to carry into full effect all that had

ever been suggested in reference to the cost of manufacture, a paper was handed to the Committee, of which the following is a copy:—

"First. We will alter the works belonging to the city, so that they shall have, using Sanders's process, a productive capacity equal to what they now have by the coal gas method in present use, for a sum not larger than that reported by the Chief Engineer as the cost of repairs for 1859, which included renewal of retorts, labor of repairs, &c.

"Second. We will agree to keep the water-gas apparatus in an equally efficient condition, for an annual payment of one-half of the sum charged by the Chief Engineer as the cost of repairs for 1859.

"Third. We will supply all the labor of gas manufacture, materials, and fuel, and will deliver gas, of a quality equal to that now made from coal, into the holders of the city, at seventy-five cents per thousand feet.

"We propose to remedy the present mode of furnishing gas to consumers at an excessively high pressure—which now compels an excessive, useless, and costly consumption, and excites the numerous complaints of the day—by manufacturing gas at the various local works that have been abandoned, confining the delivery of gas to convenient districts that shall not be so extended as to require at one point more pressure than is just or economical, in order to supply consumers at remote distances; and, further, to divide such districts as may be found so extensive as to involve a necessity for such increased pressure. This reform would be promotive of the interests of the city and of consumers."

From that time forward nothing was heard of the Committee until the appearance of the following in the public journals, on Friday last:—

"In pursuance of the resolution, the Committee examined into the details of the apparatus and processes used in producing three different kinds of gas. First, from bituminous coal; second, from the distillation of wood; and third, from the distillation of rosin or some other hydro-carbon in conjunction with the vapor operator (of water?) and hence called water gas. These several processes, in actual operation, have been examined by the Committee at the city works, and it was made evident that each can produce illuminating gas of excellent quality, and that the choice between them must depend on the relative economy and convenience, and certainty. The Committee are of the opinion that the cost of gas produced from wood is the lowest, and that from rosin and steam, the highest. The subject is now under investigation by a special committee appointed by the Board of Trustees. The report expresses the opinion that no change in the materials for the manufacture of gas could be advantageously made by the Philadelphia Gas Works at present."

In reply to this we have to say, that the Committee have never submitted to us any portion whatever of the real or pretended facts upon which their report is based—that being the sort of "fair play" that has been shown. To what extent they had been warranted in placing confidence in the statements privately submitted to them, we propose now to show—first, however, stating that, having made the above proposition, our Board deemed it due both to themselves and to the Trustees of the City Gas Works to advise them of the facts, as was done in the following letter:—

Office of the Keystone Gas Company, 417 Walnut Street.
Philadelphia, Friday, April 27th, 1860.

To EDMUND H. TROTTER, Esq.,
President of the Board of Trustees of the City Gas Works.

Sir: At a meeting of the Trustees of this Company, held yesterday, I was instructed to advise your Board that a recent interview between a committee of their body with the Gas Committee of Councils had resulted in an offer to supply the city with gas on terms that you will find stated in the paper which is here enclosed; and in a further offer to submit the superintendence of the lighting of

the Girard House to two competent persons—one to be appointed by each party—whose duty it should be to report all the facts discovered, whether as regarded the quality of the gas, the steadiness of its supply, or the economy of the process by means of which it is produced.

Acceptance of the first of these was, as this Board well knew, not within the province of the Gas Committee; but they desire me now to say that they hold themselves *ready to contract* with your Board, on the same terms, at any moment. Seeing that the annual saving that would result from such acceptance could not be less than $200,000, they cannot hesitate to believe that such a proposition must commend itself to your careful consideration.

Permit me now, Mr. President, to call your attention to the fact that it has been proposed by this Company to assume all the extra expense incident to the manufacture of gas in various parts of the city, and thus to relieve your trust from much of the extraordinary waste which now results from an excessive centralization. This, as you will readily see, would greatly facilitate acceptance of their whole proposal, as this Company would be at once prepared to assume the direction of one of the many works that are now idle—there to demonstrate to the entire satisfaction of yourself and your co-trustees the quality and reliability of the gas, the economy of its production, and the consequent security with which they might rely upon the faithful performance of the entire contract. Preliminary to taking such possession, this Board would give satisfactory security to your trust for the repayment of all the moneys required for effecting alterations of machinery, in accordance with the proposition now submitted, in case of any failure on their part to comply with its provisions—thereby taking upon themselves all the risk of failure. You are thus, as you see, offered, on the one hand, an annual saving of $200,000, unaccompanied, on the other, by even a shadow of risk.

As regards the proposition made to the Gas Committee, in reference to the Girard House, the Board desires me to say that your own Committee had previously declined accepting the fair and liberal offer made to you in February last, except on such terms as entirely excluded that building, which is, at present, the only one in that vicinity in which the proposed inspection could be carried on. The Committee of Councils forthwith accepted it, to be carried into effect as soon as a small appropriation could be obtained, for which, as they said, application would at once be made. Since then, however, this Board has learned, with great surprise, that the officers of your works have refused to permit the introduction of Water Gas into the building, except upon such conditions as must entirely prevent its proprietors from using the City Gas at such times as it may become necessary to repair any portion of their private works. They regret exceedingly this course of action—so widely different as it is from that liberal one pursued in other cities—having, until now, most confidently hoped to be able very speedily to invite both your Board and the City Councils to witness and admire the simplicity and economy of the process, and the beautiful quality of the light produced. Happily, however, the small building on Lodge Alley can be lighted up without a permit from your officers, and therein this Board will hope, before the lapse of many days, to have the pleasure of your company and that of the city authorities, as well as the still higher one of demonstrating to both you and them, the entire truth of all that has been claimed for the Water Gas of Dr. Sanders.

Meantime, I remain, very truly and respectfully yours, &c.,

(Signed,) HENRY C. CAREY,
President, &c.

That the saving above suggested is not an over estimate, is proved by the fact that the 494,000,000 of feet of gas sold in the last year, are shown by the Engineer's report to have cost, including repairs and incidental expenses (but not including services, street mains, new works, or interest), more than $700,000, or about a dollar and a half per thousand feet.

What, however, it will be asked, is the actual cost of Water Gas? Is it or is it not, such as would warrant the Trustees in giving attention to this proposition? In answer, we have to say that in February, 1859, after more than half a year had been given by Professor Cresson to an

examination of that question, a gentleman well known in the scientific world—Professor Mapes—presented himself at the City Gas Works in search of information. While there he received from the Assistant Engineer, Dr. Cresson, in that gentleman's own hand-writing, a statement of the quantity of labor and materials required, the product of the retorts, and other information, the accuracy of which was assented to by the Chief Engineer, who, to use the words of Professor Mapes, stated "that these estimates were entirely dependable, so far as related to Water Gas, as he had left a fair margin for safety, to prevent an under estimate as to its cost." From the material thus supplied, Professor Mapes made the following—

Estimate of a bench of Three Retorts for Water Gas.

249 lbs. of charcoal, 15 bushels, 8 cts. . . .	$1 20
2350 lbs. of rosin, 50 lbs. per M feet of gas, ½ ct. .	11 75
Labor, at the rate of 1 man at $3, to 10 retorts .	1 80
Expense of steam	50
Cost of purification, not exceeding	90
16 bushels of coke, 8 cts.	1 28

As the retort gave 328 feet of gas per hour for 48 hours, the three retorts would give in 48 hours 47,232 feet, at a cost of $17 43, or less than 37 cents per M feet, the cost of coal gas made by the company being $1 20 per M feet, and the quality, as compared with the Water Gas, only as 47 is to 53.

Some months later, after a whole year of experiment, the assistant engineer, Dr. Cresson, stated that the total cost, including repairs and other charges usually made against coal gas, might be put down at sixty cents per thousand feet, which, as we see, is precisely one-half of the cost of gas from coal, as given to us by Professor Mapes, and in still less proportion to that shown by the Chief Engineer's last report, as above stated.

Previously thereto Professor Cresson had suggested to the proposed purchasers of the patent the expediency of modifying their contract with the patentee, by the establishment of a sliding scale, in virtue of which his compensation was to be diminished with every increase of cost from thirty up to fifty cents—that being the limit fixed by him, after careful observation during a period of more than half a year. This suggestion was adopted.

Such being the real facts of the case, whence could have come the erroneous statements by which the Gas Committee have been so much misled? Not, certainly, from either of the Messrs. Cresson—those gentlemen having agreed, at the request of members of this company, and *for their use*, to examine into the question of cost, and to make a report upon it, which report has never yet been made. To this hour the parties for whom the work was undertaken have had no advice of any increase in the quantity of materials, or of labor, required for producing any given quantity of gas—all those figures yet remaining, so far as they are informed, precisely as they were given to Professor Mapes. To suppose that either of the Messrs. Cresson, while refraining from reporting to those by whom they were engaged, and for whom they had undertaken to act, could, even for a moment, have thought of furnishing injurious reports to outside parties, would surely be doing them great injustice. Such reports, however, have unquestionably been made by parties who have had connection with the City Gas Works. What are they, and whence have they come?

To these questions we now most respectfully ask an answer from the Chairman of the Gas Committee of Councils, not doubting that he must see not only the propriety, but the justice, of furnishing the information for which we ask. The day is near at hand when water gas will be exhibited at several places, and the cost of manufacture fully demonstrated—enabling all to test the accuracy of the statements made in February, 1859, as compared with those upon which the Committee have ventured now to act.

The question may here be asked: "What object can any of our citizens have in view that should induce them to oppose the introduction of this great improvement?" In answer we would say, that many of them are heavily interested in the present and prospective supply of bituminous coal to be used in the various gas works of the country; that others have patents valued almost at millions of dollars, for machinery to be used in the manufacture of gas from wood or coal; and that others, as is generally understood, have been actively engaged in arrangements for obtaining permanent control of the City Gas Works, with a view to the maintenance, for their own profits, of the present enormous tax on light. These being vast interests, all of which must be in some measure affected by the introduction of water gas, we need not be surprised that each and all of them should gladly hail any and every statement having for its object the delay, if not even the absolute prevention, of its accomplishment.

In conclusion, we have to say, that in the effort to introduce among our people what we hold to be a most valuable and important improvement, we have believed we were rendering service to the community in which we lived. So far have we been from desiring to acquire power to be used at their expense, that we have offered, after having demonstrated to competent persons what was its real value, to submit the question of compensation to impartial men, all of whom, as gas consumers, must be interested in having light supplied at the lowest price. Anxious for peace, we have been ready to make for it almost any sacrifice, except that of admitting to be false what we know to be true; and yet, so little has been the progress made in that direction, that it is at this moment doubtful if the proprietors of the Girard House, after their large expenditure, will receive a permit for the introduction of their own gas, except upon terms that they could not safely accept, were they about to manufacture it from either wood or coal.

The extraordinary value of this discovery seems to us to be fully proved by the strenuous efforts that are being made to stifle it. Were it worthless, the lighting of the Girard House would be permitted to go on, that it might then and there openly and publicly kill itself. Truth, however, is mighty, and must ultimately triumph over all the opposition that can be made.

Signed,

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART.

OFFICE OF THE KEYSTONE GAS COMPANY, *Wednesday, May* 2, 1860.

To the Editor of the North American and United States Gazette—

Dear Sir: I have seen with some surprise a communication in your paper of Saturday last, in which my name is introduced in connection with statements so grossly erroneous as to require from me such emphatic denial as may clear me from being a willing party to a scheme pressed upon the community with great industry and pertinacity. If the respectable gentleman who has been put forward as the President of this concern had extended to the person he has thus unceremoniously dragged before the public, the common courtesy of an inquiry as to the truth of the allegations he endorses, he would probably have obtained such a knowledge of the truth as would have satisfied him of the injustice of the course he has chosen to pursue.

The allegations and intimations of which I deny the correctness are the following:—

First. It is intimated that I had entered into an arrangement with the parties interested in this so-called water-gas patent, and undertaken to act for them. In what capacity is not stated. To this intimation I must say that it is not true in any sense whatever; as from first to last I have acted solely for the Philadelphia Gas Works, and declined most positively to occupy any other position, although repeatedly urged to do so, and pressed to accept some consideration for so doing. Again, I deny having given to any individual other than those with whom I was in official relations, as the Engineer of the City Gas Works, any statement of the cost of the water gas. Nor have I at any time entered into any engagement so to do.

I further deny having, at any time, intimated that fifty cents a thousand feet was the *upper* limit of the cost of water gas, having, on the contrary, stated to Mr. Moore, when consulted by him as to the expediency of modifying his contract with the patentee, that it certainly could *not* cost *less* than sixty cents, but how much more it would cost could not yet be decided, as it must depend upon the results of a much longer trial than had then been given; the principal *uncertainty* as to cost being the expense of maintaining and renewing the apparatus, which had as yet been so great as to raise the cost of this gas much above that of coal gas; and, moreover, the daily cost of materials and labor then supposed to be sufficient might be very much changed by the time the serious and almost fatal difficulty of maintaining uniformity in the illuminating value of the gas should be obviated by further experience. Finally, it is denied that the officers of the Gas Works have refused to permit the introduction of water gas into the Girard House, either with or without conditions.

The officers of the Gas Works have no voice in such a matter, and no application was made at the office with reference to it previous to the date of the letter of the President of the Keystone Gas Company, in which this assertion is made.

Having thus given my denial of what I deem the inaccuracies of the article in question, the circumstances seem to justify my occupying some further space in stating, with such brevity as can be attained, the principal facts of my connection with this affair.

In the summer of 1858, Mr. Marmaduke Moore called on me to inquire whether an experiment on a new method of making gas could be tried at the city works; and was informed that the rule of the works was to permit such experiments, if the inventor furnished his apparatus without cost to the works, and set it in operation under his own directions.

He then stated that, in conjunction with some of his friends, he had entered into a contract for buying a certain patent right for the sum of one hundred thousand dollars, payable in ten annual instalments, if after trial, the patentee should "demonstrate to the satisfaction of the Chief Engineer of the Philadelphia Gas Works that gas can be made on a large scale by Sanders' process, and not to exceed in cost thirty cents for each and every thousand cubic feet."

He described the process as one for making gas from water and rosin; and was immediately informed by me that this was no new thing, having been tested at the City Gas Works and elsewhere many years ago, and patented in one of its modifications by Mr. Stephen White.

His reply was that Mr. Sanders' process must be new, as he had succeeded in getting a patent after it had been compared with that of Mr. White. Permission to make the trial was given, the apparatus was sent to the gas works by an agent of Mr. Sanders, and set up under his directions; he remained here some weeks and made an attempt to manufacture gas, which proved a failure, the apparatus breaking down as soon as it began to yield any product. After a second trial, with no definite result, the parties interested asked whether I would consent to the erection and trial of a retort, under the supervision of the skilled employees of the gas works, whose greater practical knowledge might give it a more successful issue; at the same time expressing an opinion that the cellular retort, then in use for making wood gas, would work better than that of Mr. Sanders.

The consent was given, and the experiments were continued with various modifications for many months, in 1858–'59, a brief account of them being given in my annual report at that season. While these trials were in progress, Professor Mapes, of New York, visited the works and asked for information as to the results obtained. I declined giving him any statement on the subject, as nothing conclusive in their favor had yet been obtained, and invited him to make an examination for himself; for which purpose he was made welcome at the works for as many days or weeks as might suit his own convenience, with full permission to weigh, measure and inspect all that he desired to scrutinize.

He remained a few hours, witnessed the process then going on, and took from the different subordinates their replies to his interrogatories, which, as I understand, embraced only such points as he judged to be important. These interrogatories I declined to answer or criticize, thinking the free permission to examine for himself, to be all I ought to grant; and I learned, from the persons to whom he applied, that they limited their statements to the points on which they were interrogated, without pretending to furnish complete or definite information; and on some of these points they could give nothing more than an opinion or conjecture, as there was no actual experience on which to base the reply.

Professor Mapes made a report which was not submitted to my inspection, nor seen by me until some time after it was printed. As soon as I understood that it was published, I made a public disclaimer of all responsibility for its statements, in a note to my annual report.

Upon the suggestion made by Mr. Mapes, that a different retort would give better results than the one in use, permission was promptly granted for its trial, if furnished and put in use at the expense of the parties

interested. It was thus set up at the city works, but not put in operation, as the persons interested were unable or unwilling to make the experiment.

A trial of it, made at the Northern Liberties Works, was reported to have failed entirely; and that at the city works was taken down without trial.

With respect to the estimate of a bench of three retorts for water gas, and its contrast with coal gas, I shall make no remark, but will leave the question therein raised to be settled by the officer who is said to have given the statement, and who will, no doubt, be able to give a satisfactory account of the matter.

During the whole course of this affair my position and action have been solely as the Chief Engineer of the City Gas Works. Mr. Moore, who seems to have been the agent of his partners in the business, was distinctly informed at the outset that I would act in no other capacity, and that the Trustees of the Gas Works would be entitled to the earliest information of any results of practical value; he repeatedly urged upon me offers of an interest in the patent as a consideration for my time and trouble, which offers were peremptorily declined. He then desired me to nominate such of my personal friends or relatives as I might wish to have favored with proffers of interest in it; and this was likewise declined. To his repeated solicitations for an opinion or certificate of the results, my uniform reply was that when Mr. Sanders made good his engagement to produce gas on a large scale, at the low price named in his contract, I would certify the fact, first to the trustees of the works, and then, with their consent, to the parties engaged in the project.

No such result has yet been obtained, and of course the desired certificate has not been given by the referee, who is under no obligation, express or implied, to report or certify under any other conditions.

To the reiterated inquiry as to whether, in my judgment, it would be wise to make advances of money to the patentee, my reply has been constantly in the negative, unless he could give sufficient assurance of its return in case the contract should be annulled.

All efforts to obtain from the referee a commendatory certificate having proved ineffectual, the subsequent resort of some of the disappointed parties has been, I regret to say, a system of industrious vilification of his motives by insidious innuendoes in private, and anonymous slanders in the newspapers, to which I have made no attempt at reply or retaliation, nor shall I now retort upon these parties their discreditable accusations of corrupt and dishonest motives, but will merely recount a few facts which may afford the means of judging whether these offensive imputations might not be returned upon the authors with some show of justice.

In the first place, a gratuity of an interest in the patent is tendered to the public officer in chief, whose certificate is expected to stamp its value in the market. This having been promptly rejected, a right is offered him to nominate some of his friends and relations, who shall be allowed to participate in the promising speculation.

Then an offer of a gratuitous interest is made to his son, the second officer in the same public trust. And finally the privilege of participation in the scheme is offered for the acceptance of individual members of the Board of Trustees of the Gas Works, upon whom would devolve the duty of deciding on any proposal that might be made for the sale of the patent right; the price then named for such right being a royalty of ten cents

for each thousand feet of gas made at the works; amounting on the present scale of manufacture to more than fifty thousand dollars a year, and probably rising to double that sum long before the expiration of the patent, thus modestly proposing to take from the city and the consumers of gas some seven or eight hundred thousand dollars for the benefit of these patriotic few, whose whole investment would amount to a few thousand dollars advanced to the patentee in the first year, and a sacrifice of the yielding conscience of a public officer, should he be found amenable to the sound arguments with which he had been plied. I beg to repeat, Mr. Editor, the declaration that I have no desire to prefer any accusation of improper motives against these gentlemen. The actions I have described are susceptible of proof, and each one may form his own opinion of them.

The gentlemen representing this new gas company may perhaps reply that their present beneficent offer to the city is of a different character from that previously suggested. This is certainly true, and as the subject is one of great importance, allow me to present a brief examination of this proposition and its accompanying circumstances, by which you and the public may be enabled to decide whether the city authorities, who are the guardians of the city's welfare, should venture to accept it.

A few respectable gentlemen, no one of whom had ever had one single hour's experience in the business of making and distributing illuminating gas, were persuaded by a person, to them a stranger until a few months previous, who was equally with them destitute of all practical experience in this business, that he could put them in possession of a most extraordinary discovery in gas making, which, as originally described in the archives of the Patent Office, claimed "carrying the mixed vapors of water and a hydrocarbon formed in the manner described, into a retort containing carbon at a high red heat, for the purpose of producing an illuminating gas." The person claiming to hold this discovery was permitted to make trial of it at the City Gas Works, where he failed to produce any profitable result, the entire product of gas being less than sufficient to defray one-tenth part of the outlay for the experiment.

This failure was attributed by the experimenter to his own want of practical experience, and not to any defect of the plan. At his request, and that of the gentleman who represented the other contracting party, the subject was taken up at the Gas Works, and pursued with all the advantages that long experience could confer. A considerable quantity of gas was made, but the process exhibited peculiarities which unfitted it for general use, the gas becoming destitute of illuminating power, and thereby leaving in darkness the building in which it was used. The causes of this trouble were carefully investigated, and found to be removable by certain changes in the process, which raised the cost of the gas above that of the methods before in use.

On the announcement of this result, the parties interested refused to give it their belief, and evinced symptoms of a suspicion that it was the result of a recent change of professed opinion, from some unworthy motives, forgetting that these very difficulties, which they now pretend to scout as an after-thought, had been officially reported to the trustees and to councils, in the winter of 1858–59, and the statement of them printed in public documents of extensive circulation, nearly a year before the time at which they have alleged this assumed change of opinion occurred.

Upon the adoption of this suspicion, the scene of these experiments was

shifted to other gas works, owned by private companies, where they were crowned with perfect success, if we may give credit to the graphic accounts published in the newspapers. But it seems that neither of these companies, which are managed by experienced business men, fully awake to their own proper interests, have consented to the adoption of the process, and their unwillingness to do so is ascribed to unfair or improper influences.

The foregoing I believe to be a true statement of antecedent acts, by which the real character of this proposition for saving two hundred thousand dollars a year must be judged. The entire quantity of gas made in these experiments would not suffice to supply this city for a single winter's evening, and during its production the lights supplied by it have failed at the city works more than a score of times. How often this disaster occurred at the other places of trial is not reported.

Would you, or any other intelligent and unbiassed man of business, advise the city authorities to encounter the hazard of a calamitous deprivation of the light, upon the regular supply of which depend the comfort and security of more than half a million of people, in order to make a public test of a project put forward by a few respectable gentlemen who have been misled by specious accounts of the cost of a supposed new process, ingeniously made up so as to embrace a part only of the known expenses, and exclude important items, the amount of which is unknown even to the parties most directly interested. And which, moreover, after the most careful trials at different establishments, and most assiduous fostering during nearly two years, has failed to impress favorably one single expert in the business.

Upon hearing that an attempt was being made to obtain some public endorsement of this scheme through the action of the City Councils, I deemed it my duty to place some of the foregoing statements and proofs of their accuracy, in possession of the proper committee of that body, and of the Trustees of the Gas Works, and would have most freely offered them to the inspection of the esteemed president of the Keystone Gas Company, had he not refused to give any opportunity for a hearing to one who had been most unjustly assailed under his official sanction.

Whether the action of the intelligent gentlemen who composed the Committee on Gas Works in Councils was in any way influenced by these statements, is not for me to decide; but I am certainly of opinion that a knowledge of them would justify some hesitation before endorsing the project.

In conclusion, allow me to remark that a public officer on whom may devolve the painful duty of defeating a golden hope of such magnificent proportions as was this, must expect to become a mark for many envenomed shafts. But wounds thus received find an effectual antidote in the "mens sibi conscia recti." Resting in which I remain yours, respectfully,

JNO. C. CRESSON,
Chief Engineer Philadelphia Gas Works.

Mr. Editor: In the article on water gas you were kind enough to insert for me in your paper of this morning, an intimation is given that some points of less general nature were reserved for further use, and I now desire to present a portion of these for the consideration of your readers.

In the letter of the committee of the Keystone Gas Company, published on the 5th of the month, is a professed quotation from the report of Professor Mapes, intimating that certain estimates were stated by the Chief Engineer "to be entirely reliable." The letter of the committee places these words of official endorsement in such seeming connection with a tabular statement, constructed to exhibit the supposed low cost of water gas, as would mislead persons not in possession of the Professor's report, to the belief that the words of endorsement apply to that tabular statement and the deductions following. If you will take the trouble to turn to page 13 of the Professor's report, you will find the endorsement of reliability applies to matters entirely distinct from, and contradictory to, the deceptive statements I am thus disingenuously represented to endorse. The statements pronounced by me to be reliable, were those of the "price of coke," and quantity of coke and labor required to keep in action nine retorts for twenty-four hours; all which were derived from the official records of the Gas Works, and reached in amount three times the quantities given in the statement now put forth as reliable.

It would be inconsistent with my accustomed mode of speaking to designate this ingenious device by the emphatic terms which would describe it in vigorous Saxon, but I will merely say that it is in harmony with the subsequent exhibition of hypocrisy with which it is said that "the statements" to the "Gas committee" of Councils "could not have come from either of the Messrs. Cresson." Now, would you believe that this honorable Keystone triumvirate knew perfectly well, when they penned this exclamation, that the statements alluded to did come from one of the Messrs. Cresson; and, moreover, knew that these Messrs. Cresson were not and never had been under any agreement to do anything for the special "use" of their company, nor, under any sort of obligation, expressed or implied, to conceal from the proper authorities the ingenious arts practised, for conferring a false brilliancy upon the ignis fatuus of water gas.

With an allusion to one other matter set forth by the Keystone committee I will, for the present, conclude. They say that "to this hour they have had no advice of any increase in the quantity of materials or labor required for producing any given quantity of gas," leaving the reader to infer that the quantities of which they had advice are those presented in their ingenious tabular statement. Now, please look at the state of facts under which this declaration is put forth for public belief. At the time Professor Mapes made his examination and report, and for many weeks before, and several months afterwards, a daily record was kept at the Gas Works of the materials used and the gas made in these water gas experiments. These records, the exhibition of which to the Gas Committee of Councils is "the head and front of my offending" toward these would-be regulators of my official duty, were open to their inspection, and were examined frequently, almost daily, by at least one of their number.

The figures presented in these official records, in conjunction with the daily time sheets and repair account, show the cost of water gas to be about three times as much as indicated by the figures now put forth.

Should there be any wonder that upon seeing these latter figures for the first time in a printed paper purporting to be the report of Professor Mapes, I denounce them in merited terms; and farther upon their publication in an anonymous pamphlet, bearing on its title the superscription of the Keystone Gas Company, I should hasten to disclaim all connection

with them, in the mildest language the case admitted, in a foot note to my last annual report to the Trustees of the City Gas Works.

Not wishing to comment further on this extraordinary affair, I remain yours, respectfully,

JOHN C. CRESSON,
Chief Engineer Philadelphia Gas Works.

PHILADELPHIA, May 8, 1860.

MR. EDITOR: Allow me to ask the attention of your readers to some other of the curious points revealed by an analysis of the remarkable letter of the Keystone Gas Company. After giving their tabular statement, showing the professed cost of operations in water gas making for 48 hours, which they so cunningly endeavored to make me endorse as reliable, they proceed to say: "As the retort gave 328 feet of gas per hour for 48 hours, the three retorts would give, in 48 hours, 47,232 feet, at a cost of $17 43, or less than 37 cents per thousand feet; the cost of coal gas made by the company being $1 20 per thousand feet, and the quality, as compared with the water gas, only as 47 to 53." This brief paragraph is most ingeniously contrived to convey impressions to the unsuspicious reader, which are quite at variance with the truth, as you may perceive by reference to the report of Professor Mapes.

On page eleven of the pamphlet issued by the Keystone Company, at the thirteenth line from the foot, the professor says:—

"The steam was turned on without rosin, and this furnished gas at the rate of 328 feet per hour, and of peculiar quality. Its lighting properties were quite low."

The quiet, unobtrusive phrase, "quite low," being a gentle expression, signifying that the gas was non-*illuminating*, but as the Professor goes on to say, possessed considerable *heating* power.

Whether the yield of gas per hour was kept up after the gas became illuminating is not stated by the Professor in his report, and possibly might not have been known by him.

But a part of this Keystone Committee, whose constant and repeated inspection of the daily record of operations left no point unknown, knew perfectly well that the quantity of gas produced did not so continue when it acquired any illuminating value. The average yield of the retort then in operation is shown by the record to have been less than one-third of 328 feet per hour of gas having the average illuminating power.

With this knowledge, please peruse again the sentence of the Keystone letter we are examining.

It will be seen that the excellent quality of the gas described in the last line of the quoted paragraph, is attributed by the committee's letter to the large yield per hour with which this paragraph commences.

Merely asking the candid reader to compare these facts and their assertions, and then ponder their significance, I pass to the next kindred matter embraced in this same brief paragraph, big with curious revelations.

The quantity of 328 feet of gas per hour is supposed to be kept up for forty-eight hours, and the reader of the sentence will doubtless think that such was actually the case.

Let us again refer to that relentless record of the daily doings of the gas works, kept for no other purpose than to exhibit the simple truth as

it transpired, the exhibition of which to the proper authorities, at an unpropitious moment, drew from the Keystone Company a base imputation of my betrayal of the secrets of these my pretended secret employers. This official record shows the *average* yield per retort from the commencement of the water gas experiments down to the conclusion of the examination, by Prof. Mapes, to be less than one-third the quantity assumed in this "reliable" statement in which the yield is given in connection with the average quality.

Should any of my readers think I have used too much of harsh expression in my comments on this Keystone letter, let it be borne in mind that they are used by one unaccustomed to having his reputation for honesty assailed in the public prints over the signatures of respectable citizens; although for some months past he has been subjected to many painful imputations against his motives, industriously whispered in corners of numerous business marts. These have been endured with as much forbearance as could be attained, though not without much serious reflection upon the extent to which this forbearance should be esteemed a virtue. Concluding for the present my criticism of this paragraph, I remain yours, respectfully,

JNO. C. CRESSON,
Chief Engineer Philadelphia Gas Works.

PHILADELPHIA, May 9, 1860.

THE GAS QUESTION.

No. I.

MR. EDITOR—*Dear Sir:* Professor Cresson's mind being evidently ill at ease, in consequence of the use that has been made of Professor Mapes's facts and figures, we hasten to relieve it by requesting you to publish the report in full, together with this letter. Your readers will thus be enabled to judge for themselves whether we have in any manner failed to give the exact ideas its author had desired to convey.

What we did say was, that Dr. Cresson furnished various statements, that his father approved of them, and that from them Professor Mapes made the estimates there given, pledging, of course, his professional reputation for their accuracy.

In regard to our own accuracy your readers will now judge. So perfectly clear are we in regard to it, that we should be willing to meet Professor Cresson before three fair and honorable men, authorized to make the decision of all the questions between us, dependent upon their verdict in reference to this single one. Not quite so clear is it to us why Professor Cresson, in his many articles, nowhere should have found place for the important fact that the data used by Professor Mapes had been obtained from Dr. Cresson, *in his own handwriting*, and cannot be now denied.

In your next we shall hope to enable your readers to form a correct opinion of the accuracy of other of Professor Cresson's statements.

Yours, very truly,
(Signed) HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY, Thursday, May 11.

REPORT MADE BY PROFESSOR J. J. MAPES TO THE NEW YORK WATER-GAS COMPANY.

I have visited Philadelphia, and have examined the practical operation of Sanders' method of making water gas, as pursued in a portion of the works of the Philadelphia Gas Company. The engineer, Professor Cresson, the assistant engineer, Dr. Cresson, and his associate, Mr. Gay, gave me every facility for a thorough and careful examination.

They have been manufacturing gas on this plan for some months, and on my arrival I found one or more of their gas holders filled with the water gas, and thus had an opportunity of accurately testing its average quality, compared with the average quality of the coal gas manufactured by the Company. This was done in my presence by Mr. Gay, and repeated by myself twice. The instrument used was the photometer belonging to the Company, and which correctly shows the difference in quantity of light produced from a standard candle, consuming one hundred and thirty grains per hour, and the gas to be tested. This proved the water gas to be worth 53, as compared with the Company's gas at 47. The minutia of this calculation is with me, and open to inspection.

I spent Monday at the gas house, noticing the manufacture of gas, and rendering myself familiar with the operation, machinery, &c. On Tuesday morning, the 22d inst., the President placed the retort and appurtenances, with the necessary number of hands, at my disposal. The retort was heated red hot, and was charged with 83 pounds of oak charcoal, the rosin hopper with 60 pounds of rosin, and the retort was closed at 11 o'clock, the charcoal at that time being under full ignition. The steam was turned off without the rosin, and this furnished gas at the rate of 328 feet per hour, and of a peculiar quality. Its lighting properties were quite low, but the amount of heat evolved from this flame was evidently so much greater than that given off by the burning of the illuminating gas as to render it worthy of special consideration, when its extremely low cost is taken into account. As soon as the rosin became melted it was suffered to pass slowly into the steam tube, and thus with it to find its way into the retort. The gas immediately assumed a superior degree of brightness, quite exceeding that of a coal gas burner alongside, and fully equal in quality, if not superior, to that tested on Monday by the photometer. The steam used was at a pressure of twenty-five pounds to the inch. The fuel used was coke; and the workmen, who are very intelligent and accustomed to running these retorts both with water and coal gas, informed me that the charge then in the retorts would continue to give gas at the same rate, and of the same quality, for 48 hours, at the end of which time half the charcoal would be consumed; that the quantity of coke to run this retort for 48 hours would be from 14 to 16 bushels, and for running the same retort, in the making of coal gas, the quantity required would be 24 to 26 bushels. The information received from these workmen was corroborated the next day by the engineer and Dr. Cresson, as agreeing with their former experiments, except so far as relates to the quantity of coke consumed, which they supposed would be about the same, whether coal or water gas was made.

The same quantity of coke, however, would run three or more retorts, when properly set in the same bench, instead of one retort, as used in the above experiment. The inventor claims as the rationale for the production of gas, under his plans, that the steam is decomposed by the incandescent carbon, the hydrogen becoming carburetted hydrogen by combining with portions of the carbon; while the oxygen takes up carbon, becoming carbonic oxide.

This is evidently true in degree, as shown in my experiments, with the steam and charcoal alone, before the introduction of the rosin. After the introduction of rosin, its decomposition and combination with the constituents of the steam change the light carburetted hydrogen into heavy or illuminating carburetted hydrogen; all of which is a fair hypothesis as to what may go on in the retort. At any rate, whatever may be the modus of the operation or combination within the retort, the practical result is the production of an illuminating gas of a superior quality to that usually made from coal, and at a cost very far below that of coal, oil, or other gas.

On Wednesday, when at the office of the Company, the chief and assistant engi-

neers answered the series of questions which I propounded to them. Among the facts arrived at were the following:—

Selling price of charcoal at the works, eight cents per bushel.

That two or four retorts might be set in the same bench, and worked by the one fire.

That one man could attend to ten retorts, supplied with two streams of rosin each.

In making of coal gas the quantity of coal used in such a retort as that used by me in making the water gas, would be per day, 2200 lbs., and in their usual coal gas retorts of double the size, 4600 lbs.

That in making coal gas, four men would be required per 24 hours to attend nine retorts, worked by three fires.

That the price of coke might be fairly estimated at five cents per bushel.

Professor Cresson stated that these estimates were entirely dependable, so far as related to water gas, as he had left a fair margin for safety, to prevent an under estimate as to its cost.

Estimate of a Bench of Three Retorts for Water Gas.

249 lbs. of charcoal, 15 bushels, 8 cts. . . .	$1 20
2350 lbs. of rosin, 50 lbs. per M feet of gas, ½ ct. .	11 75
Labor, at the rate of 1 man at $3, to ten retorts, .	1 80
Expense of steam	50
Cost of purification, not exceeding	90
16 bushels of coke, 8 cts.	1 28
	$17 43

As the retort gave 328 feet of gas per hour for 48 hours, the three retorts would give in 48 hours 47,232 feet, at a cost of $17 43, or less than 37 cents per M feet, the cost of the coal gas made by the Company being $1 20 per M feet, and the quality, as compared with the water gas, only as 47 is to 53.

The retort used for coal gas, I consider quite inappropriate for the making of water gas, notwithstanding the economical results shown above. One of the conditions called for is to pass the steam and the results of the destructive distillation of the rosin through incandescent carbon. This cannot be thoroughly done in a horizontal retort, because the water gas being made partly at the expense of the incandescent carbon, it must leave an upper chamber, through which the steam and the results of rosin may pass above, and not through the incandescent carbon.

I would recommend a bench of vertical retorts, invented by S. Wetherell, of Bethlehem, Pa., by the use of which every particle of vapor must pass through incandescent coal, even until the last pound in the whole bench of retorts is consumed.

Yours, respectfully,

JAS. J. MAPES.

New York, February, 1859.

Mr. Editor: I propose to-day to conclude the analysis of the brief paragraph of the Keystone committee's letter quoted and commented on yesterday. It closes with a comparison between water gas and coal gas, in which the cost of the latter is assumed to be $1 20 per thousand feet, the cost of water gas being estimated at 37 cents per thousand.

If the intelligent reader has duly studied the statements of the facts recorded in the official accounts of the City Gas Works, he will have seen that the actual cost of water gas, as shown in the results of working during many months, is about three times the amount above estimated, or equal to about $1 10 per thousand feet. He must bear in mind the further fact that this sum represents only the net cost of the gas as it leaves the retort house, with no allowance for the subsequent loss of quantity by leakage and condensation, nor for incidental expenses outside of the retort house.

These incidental expenses being the outlay required for the repair of buildings and of apparatus, outside of the retort house; for care and repair of gas holders, and of street mains, and services and meters; the handling and storage of materials, and their waste; taking meter statements for bills; the computation and distribution of these bills, and their collection; besides many other things essential to the safe and successful management of a manufacturing and commercial establishment.

The cost of coal gas, assumed as before mentioned at $1 20 per M., includes all these items, except the loss by leakage. The estimated cost of the water gas includes none of them; but as they belong equally to the storage and distribution of all sorts of illuminating gas, the latter must be charged with them equally with the former. The aggregate outlay for these various items, excluding leakage, is shown by the account books of the gas works, to be about 34 cents per M, and when added to the prime cost of the water gas, brings its total to $1 44 per M., or 20 per cent. more than the cost of coal gas.

I am most happy to say that I have no reason to suppose the comparison made of the gases at these widely different stages of their cost, was intentionally so made, but was the natural result of a want of experience in the matter.

It will without doubt be perceived by every intelligent man of business, that the foregoing statement of the cost of gas is exclusive of interest on capital, and payments to the sinking and contingent funds, and payments into the city treasury, to liquidate city debts incurred by the former districts, for the construction and extension of their different gas establishments, and is, moreover, exclusive of the loss by leakage of street pipes and the losses that have at times occurred on gas used for public lighting.

Very respectfully,

JOHN C. CRESSON,
Chief Engineer Philadelphia Gas Works.

THE GAS QUESTION.
No. II.

Mr. Editor: The suggestion of our unwillingness to credit that, under the circumstances of the case, either of the Messrs. Cresson could have supplied material for the recent report of the Gas Committee of Councils, has stimulated the elder of those gentlemen to the production of no less than four ponderous articles, portions of which, as it seems to us, fail to furnish evidence of the existence of that feeling of serenity which usually attends the possession of a perfectly quiet conscience. Of the space they occupy much is given to the discussion of questions that we had left untouched. The time for them will doubtless come, and we shall then be ready for them, but for the present it is our wish, as far as possible, to confine ourselves to that one to which we did refer in connection with Professor C.—to the position now assumed by him in regard to it—and to the actual state of the question that was, nearly two years since, submitted to his decision—first, however, offering a very few words on the subject of the alarming efforts at corruption referred to by Professor Cresson.

Among the articles against the water gas, and against those who have sought to promote its introduction, in which our papers have recently so much abounded, is one in which it is charged that they had attempted to

buy a Report, and a Chief Engineer along with it, but had failed. As told at length, the story goes, that a greater offer, more than $100,000, had been made for a part interest in a certain retort, conditioned, that the said Chief Engineer should certify to certain facts in relation to the cost and quality of water gas.

Truth is sometimes stranger than fiction; but were this a truth it would, as can readily be seen, be more wonderful than even the wildest fictions of the Arabian Nights. Certain parties had contracted to pay a large sum of money, whensoever Professor Cresson should certify to the accuracy of certain statements that had been made. It was, to them, highly important that he should make no mistakes in favor of the selling party. Having paid but little, they could afford to wait until he should have become entirely satisfied. In this state of things, however, they are supposed to say to the umpire, "We need a report, whether you are satisfied or not: we wish to become bound for all this money, be the commodity good or bad; and, as an inducement to you to make report, we now offer you a yet larger sum for part of another commodity, the whole of which, as we are situated, could scarcely be to us of the slightest value." This seems supremely ridiculous, and yet it is precisely what is now charged upon us by men who are high in the confidence of Professor Cresson.

So much of what that gentleman himself has said relates to his conversations with his friend Mr. Moore, one of the members of this committee, that the latter has deemed it due to himself to state the facts as they are known by him to be. In now placing his letter before you, his associates may, as they believe, be permitted to express their firm conviction that no one who knows its author will fail to feel while reading it, that it is the production of one who is entirely incapable of using forms of words calculated to produce upon the minds of his readers any impression other than that of the literal and exact truth as he himself has understood it. It is as follows:—

PHILADELPHIA, May 9, 1860.

HENRY C. CAREY, ESQ. *Dear Sir:* The extraordinary statements put forth by Prof. John C. Cresson, Chief Engineer of the City Gas Works, in his manifesto of yesterday and supplement of this morning, compel me to place in your hands over my individual signature, and with solemn emphasis, my distinct denial of the injurious assertions and implications in which he has so freely indulged. I will make my general disclaimer more specific by treating the main points of his communication in order.

Having, in company with Mr. James Crissy, witnessed Sanders's process of water gas manufacture in Brooklyn, N. Y., I, acting for myself and others, contemplated its purchase. I proposed to the patentee as a condition upon which I would buy the right for Pennsylvania and Maryland, that Prof. Cresson should be allowed to investigate its commercial value, and report as to the cost. The patentee claimed that by his process, gas equal to that ordinarily made from coal at the city works, could be produced at a cost not exceeding thirty cents per thousand cubic feet. The patentee accepted my offer conditioned upon Prof. Cresson's inspection and report. No payment was obligatory upon me until Prof. Cresson should make such report. Before the contract was signed by me, I submitted it to Prof. Cresson, who approved of the document. He said I would run no risk, as the city of Philadelphia alone would pay the sum demanded, $100,000, for such a process. He said if I would pay for the retort, he would make the experiment. He distinctly accepted the duty of arbitrating between the seller and myself on the point of cost, and *did* promise to report the results to me. He did *not* make any reservation on behalf of the trustees. He did *not* stipulate that their consent should be obtained. He did *not* require that they should receive prior information of the results of his investigations.

No apparatus was ever sent, to my knowledge, to the city works by the patentee or his agent. A retort was ordered, as I understood at the time, from the experimental department of the city works, officially, and set up by the employees of the works, in the absence of the patentee and of his agent. The process was demonstrated to be a practicable one, and the cost was referred to Prof. Cresson's promised investigation and report.

Six months afterwards Prof. Cresson suggested to me that his examination might discover the cost to exceed thirty cents per thousand, and so relieve the patentee from the contract to sell. A modification of my contract with the patentee was accordingly prepared, by which the price I was to pay would decrease in proportion to the increase of cost above thirty cents up to fifty cents per thousand, that might be reported by Prof. Cresson as the result of his investigation. This new agreement was also by me submitted to Prof. Cresson, and approved of by him, and then agreed to by the patentee and myself.

Some months afterwards, the patantee urging me for the report or a payment on account, at an interview with Prof. Cresson, I told him that I had heard that he would report the cost of the gas as sixty cents per thousand; that I was willing to accept his report; and asked him when he would give it to me. He said I should have it before he started for Schuylkill county, or immediately upon his return. He did *not*, then, nor ever before, although I was in frequent communication with him, ever tell me that it would cost *more* than sixty cents per thousand.

About the same time I also asked him if it would be safe for me to pay some money to the patentee. He said, "What, the whole amount?" I answered, "No, a few thousand." He said, "Oh, yes, you might risk that."

Again, in the autumn of 1859 I requested a report from him. He did not refuse it, but said, "You had better not press me for a report just now."

I solemnly affirm that I never offered to Prof. Cresson any gratuity for his services or his report.

His son, who had, under Prof. Cresson, the special charge of the water gas experiments, having, as I was told, stated that a cellular retort patented by *him* was the only retort in which the Sanders process could be successfully carried out, it was thought desirable to secure an auxiliary of such supposed value. Negotiations were opened for the amalgamation of the interests of the Sanders and Cresson patents. Two gentlemen, one of whom was a trustee of the city gas works, were named, one by Prof. Cresson and the other by Dr. Cresson, as parties whom it would be desirable to associate with us.

The invitation was accordingly extended to the gentlemen so designated to unite with us on our original terms of purchase. The offer was gladly accepted and the gentlemen attended several meetings of the parties interested in water gas, but afterwards, with our consent, withdrew because of an assessment unanimously agreed to.

In conclusion, I will briefly say, that in all my action in the premises, I relied upon the honorable and confidential guidance of Prof. Cresson; and that I submitted for his perusal a copy of Prof. Mapes's report printed for private use, eight months before its publication, and Prof. Cresson's condemnation of the statements of an "anonymous pamphlet;" and that I never heard the statements of Prof. Mapes's report seriously questioned until the appearance of Prof. Cresson's series of cards of this week.

Yours, very respectfully,

MARMADUKE MOORE.

Messrs. Moore and Cresson, as is here shown, differ as widely as the poles in reference to essential facts. Which is right? with which lies the truth? To enable us to decide that question, let us take, for a moment, a plain common sense view of the case as it stands before us.

A. and B. had made an agreement of much importance, to be carried into effect or not, after a certain report should be obtained from Professor Cresson. Having read the papers, both before and after their signature, and having even suggested certain changes therein, that gentleman orders the machinery required, and prepares for the work—thereby commencing to give practical effect to the umpirage that with his consent had been

arranged. The preparations completed, the agent of A. is summoned from New York, to certify to the existence of the conditions under which the trial may be made. He approves and leaves, Dr. Cresson thenceforward taking direction of the work. Month rolls on after month, but no report is made—the contract, meanwhile, remaining unfulfilled—A. suffering all the pains of poverty, because unable to deliver his commodity—and B. remaining as entirely uninformed of all the facts developed as if he had never seen the establishment of Professor Cresson. Could such a state of things as this have been within the view of the parties who agreed to abide by his decision? Could they have expected to be held for years suspended, like Mahomet's coffin, between heaven and earth, waiting for that which should have been given in less than sixty days? Common sense, as we think, says No!

Professor Cresson, on the contrary, says Yes!—telling you that they had had precisely the treatment for which they had bargained; that he had come under no engagement to make report to *them;* that the records of his office have been always open, and that they might have searched among them for themselves; that all he had promised to do was to permit the seller to make him cognizant of certain facts, whose existence he would then report; that this he failed to do, after weeks of bungling effort, after which he himself had taken command; and that, whatever might have been the results then obtained, they had no more claim to a report than any other parties, &c. &c. To all this, as we think, common sense demurs, regarding it as little else than a repetition of that well-known fable of Æsop, *The Monkey and the Cat.*

To all the assertions of Prof. C. respecting the failures of the agent of Dr. Sanders, and the proceedings consequent thereon, we demur—holding ourselves ready to furnish proof conclusive that the real facts are directly the reverse of those stated by him to have occurred. Admitting, however, that they had been wholly true, would they, of themselves, have discharged him from the duties of the offices he had agreed to fill? Would such failure warrant him in keeping for years in doubt the parties who, unfortunately for themselves, had agreed to be bound by his decision? Did he, at any time, notify Mr. Moore that his umpirage was at an end? Did he ever say to him that if he needed a report he must look elsewhere for it? Did he not, on the contrary, as a measure of precaution, sanction, even if not recommend, the adoption of a sliding scale, with a view to secure the purchase, even in case the cost should be reported by him as high as 50 cents? Did he not, at the close of more than a year, advise his friend that he should not yet ask for a report? Does not then his action at every step, during fifteen months, indicate that he felt under an obligation to furnish the report, by which was to be decided the question submitted to him by Messrs. Moore and Sanders?

When our readers shall have answered these questions to themselves, they will, we hope, turn again to Professor Cresson's letters, explaining his past action and present position, and see if they can find in them any evidence of that frank and honorable conduct that had been looked for, by the parties we represent, at the time of his selection as referee.

(Signed) HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF KEYSTONE GAS COMPANY, Friday, May 12.

Mr. Editor: It has afforded me much satisfaction to see in this morning's paper the publication of Prof. Mapes' report on water gas; and I have merely to request your readers, who may feel any interest in this discussion, to compare this report with the letter of the Keystone Committee of the 5th of the month, and also with my remarks upon that document, especially those of the 8th and 9th.

Upon the judgment of the candid reader of these papers on the question of fair quotation and deduction, I am quite contented to rest.

This part of the subject having been so happily disposed of, I call upon the Keystone Gas Company to publish *verbatim* the alleged certificate or report of the assistant engineer, on which they now fall back in justification of their statements of the cost of water gas, and also to furnish me with a certified copy of the same. When they shall have done this the public may be able to decide as to the degree of fairness with which that officer has been made, by implication, to endorse their certificate of 37 cents per M for water gas.

If the president of the Keystone Company had seen fit to accede to the frank and friendly proposition made to him some time ago, by a mutual friend, that he and I should have a conference, at which the several matters at issue between the city gas works, or its officers, and the Keystone Company, should be discussed, or had accepted the like invitations of the trustees of the gas works, this public controversy, so entirely repugnant to my instincts and habits, might have been avoided. But even now, as I have no personal feelings or private aims to serve, I am entirely willing to enter into such a conference in the presence of three or five "fair and honorable men," to whom shall be submitted all matters in controversy, without any limitation to the extent of their inquiry. In closing this, as I hope my last letter on these subjects, I take great pleasure in acknowledging the courtesy you have extended to me, and expressing my admiration of the perfect correctness of the revise proofs which have so kindly been furnished to Yours, respectfully,

JOHN C. CRESSON,
Chief Engineer Philadelphia Gas Works.

THE GAS QUESTION.

No. III.

Mr. Editor: That your readers may properly understand the letter of Professor Cresson, in your paper of this morning, they need to be informed of various circumstances that have occurred since the close of the period whose history has been given by Mr. Moore.

Having failed in all their efforts to obtain from that gentleman a statement of the actual cost of producing gas, some of the parties interested, here and elsewhere, united in arrangements with the Wilmington company, by which it was provided that they themselves should put up certain machinery, upon the completion of which the Sanders' process should be fully and fairly tried. Their part of the work being finished, a day was fixed for commencing the work of manufacture. Gas was made, and their friends were assembled to see a city lighted, when, lo! there came an order of the Board, extorted *by means of outside pressure*, prohibiting the passage through the pipes of even a foot of water gas—that order being

followed, two days later, by a resolution of the Board, adjourning over to the spring the whole affair! So determined, however, were the friends of water gas to show what might be done, that, despite this order, it was made to pass, for an hour or two, throughout the city.

Thus driven thence, they made an arrangement for its introduction with the Northern Liberties Company—a resolution to that effect having been carried through the Board, in defiance of an opposition of the most fierce and determined character, on the part of those interested in maintaining the existing system. The works nearly completed, rumors began to circulate of the appearance of a new disease, most fatal in the case of water gas, called "unreliability"—invented at the city works, for the purpose of alarming timid stockholders, their wives and children.

The directors, nevertheless, persisted, and for several weeks the gas was made, greatly, as we know, to the satisfaction of intelligent members of the Board, who had advocated its introduction. From day to day there was an increase of apprehension that the water gas might live through all its trials, but from day to day did its opponents become more determined that it should die—personally visiting little stockholders, male and female, for the purpose of producing an outside pressure such as the Directors would find themselves unable to resist. Success at length crowned their efforts—an order from the Board closing the little works, to the great regret of those gentlemen who most had studied their operation. Perfectly satisfied themselves, our Board at once offered to carry on the work, paying all expenses, repairs included, and delivering the product at 75 cents per M. Such an arrangement would have been most profitable to the company; but, as it did not suit the parties interested in keeping up the price of gas, it was not accepted.

The facts connected with this gas disease being somewhat remarkable, we deem it proper here to give a letter from one of the members of this committee, giving an account of the manner of its first appearance on the stage. It is as follows:—

PHILADELPHIA, May 8, 1860.

HENRY C. CAREY, President—*Sir:* I called, in company with Mr. Moore, on Professor Cresson, last winter, when he stated that the Sanders water gas process was a perfect one, but there was no saving in it to the city works. I replied I was glad to hear him say that the process was perfect, because, as regarded the saving, it would be tried at the Northern Liberties next week, and we should then learn the cost. He then said, you must tell them to be careful that they are not left in darkness, as it sometimes plays us such a trick. I was surprised at the moment, but recollecting that they lighted their Market street works with it before it went into the gas-holder, and that it might be liable there to some of the many variations so constantly occurring under similar circumstances with gas made from other materials, I replied, "but the Northern Liberties works will not furnish it to their consumers, Mr. Cresson, until after it enters into their gas-holder; therefore it cannot be liable to any such difficulty." In answer, he quickly said, "You are right, I did not think of that when I spoke!" This was the first time that I had heard of any intimation that the light was not reliable.

In the first interview I had with Professor Cresson, a few months previously (having seen him only twice on this subject), on asking him what was the result of his experiment with the Sanders water gas, he replied: "there is a saving of twenty-five per cent., but the process is not perfect;" consequently when he stated to Mr. Moore and myself, at the *last* interview, that the process was a *perfect one*, I became fully satisfied that the patent for it was quite valuable.

Yours respectfully,

A. HART.

At the close of a year and a half of careful observation, Professor Cresson had succeeded in discovering that water gas, like all other gases, could "play tricks" upon those engaged in its production. So virulent, however, had the disease become, by the time the Northern Liberties works were ready, a few weeks later, that it had spread itself throughout gasometers and pipes, threatening darkness everywhere, and stimulating poor old women and weak old men to anxious efforts for the maintenance of their dearly beloved dividends, at the accustomed twelve per cent.

Knowing, as he does, all these facts, and knowing that the persons most active in getting up this outside pressure are classed among his closest friends, Professor Cresson does not yet hesitate to tell his readers, in his usual sneering manner, of the limited amount of water gas that has as yet been made! Further reflection may, perhaps, satisfy him that his cause would not be seriously damaged by an occasional manifestation of some approach toward that frankness and candor for which we have a right to look in the chief officer of a public establishment like our city gas works.

Such was the state of affairs in February last, after more than a year and a half of effort to obtain a solution of the question, "What is the cost of water gas?" Determined that it should be answered, and in a manner that would close discussion, our Board addressed a letter to the President of the Board of the city works, containing an offer to submit the question to two competent persons, one to be chosen by each of the parties to the agreement—the cost of supervision to be equally divided. The letter contained no reference to the past—our whole aim being then the establishment of the one great fact of the present, the actual cost of producing gas from water. Instead of promptly accepting it, the trustees appointed a committee, by whom we were invited to a conference, at a time and place selected by themselves. The invitation was declined, and for two reasons; the first of which was, that we were not accustomed to be so summoned. The other was, that we were determined to avoid all discussion of the past until after the one great question should have been fully and completely settled.

All that we asked for, as the Committee were then told, was a distinct and positive answer to a proposition of the simplest kind. Instead of giving this answer, the Committee sent us long letters, historical and critical—reviewing the past, and making difficulties for the future, by refusing to believe that we were fair and honorable men who sought the truth, and would be ready to unite with them in exploding the water gas, so soon as failure in regard to quality or cost could be distinctly ascertained. They could give no acceptance of our offer, except upon such terms as must, as they well knew, shut out the only place at which the trial could be made under the eyes of the people they represented. Therefore it is, that an examination which would develop the truth in less than thirty days, stands now adjourned to some other time and place.

Foiled here, it was next proposed to the Trustees that they should give to our Board the use of one of their now unoccupied works, making themselves the alterations needed, and receiving a guarantee of repayment in case of failure to furnish gas at seventy-five cents per thousand. This proposition went to the same committee, which acknowledged its reception in a letter containing another intimation of desire for a conference. To that we acceded, naming this as the place, and leaving it to them to de-

termine for themselves the time. As yet no expression of their wishes in this respect has reached our hands.

Looking now back, over the long period that has elapsed since the agent of Dr. Sanders assented to the existence of the conditions under which the trial was to be made by Professor Cresson—now almost two years—what is it that has been sought by the advocates of the water gas? Has it not been a prompt decision of the question on which they are at issue with Professor Cresson, that of cost? Seeking that, has not Mr. Moore almost persecuted that gentleman by night and day? Anxious to obtain that, have they not, at heavy cost, fitted up the works at Wilmington? Determined to have that, have they not tried the company of the Northern Liberties? Bent upon being that, and that alone, have they not made two successive offers to the Trustees of the City Works? Unwilling to be foiled in their search, have they not invited the Gas Committee of Councils to unite with them in an effort to obtain the light desired? All these things have they done, but as yet without success, because of the persevering and determined efforts of Professor Cresson and his friends to prevent the development of the facts required.

While thus seeking the establishment of a great *fact*, they have desired to avoid unnecessary waste of *words*, knowing that, under existing circumstances, phrases could do but little good. Therefore it is that they have refused to obey summonses to useless conferences, to be held elsewhere, holding themselves, however, ever ready to receive politely all that might seek them here. Asking for bread, their opponents offer them stones—giving words in great abundance while repressing and rejecting thus far every effort at obtaining the means required for satisfying the public mind in reference to the one great truth, that they ought now to be getting better light at little more than half of the present cost. Which of these parties is it that furnishes the most conclusive evidence of his own belief in the truth of what he says, he who pertinaciously demands to be permitted to produce the evidence, or he who resists its production at every step? Professor Cresson, as usual, sneers at this pertinacity of the advocates of a cheap and abundant supply of light, but with what reason, your readers, Mr. Editor, may now determine for themselves.

Professor C. objects to what he calls the unceremonious manner in which his name has been brought before the public. Where, however, lies the fault? Did he not, now nearly two years since, permit the fulfilment of an extensive contract to be made dependent upon his decision? Has he ever, in that long period, performed a single act tending to enable the parties to it to understand their respective rights and duties? Has he ever enabled them to see and comprehend what are the real facts of the case, what is his decision, or even why he has not decided? Has he not, in the meantime, furnished statements to be used elsewhere, that have not been tendered to those by whom he has been asked to act as referee? If he has done this last, as he admits to have been the case, then is it he himself that has brought his name before the world, and not we.

Assailed in every conceivable manner, this Company and its Board have, until now, made no appeals to their fellow citizens. Time and again have their motives been questioned in the meanest manner, as is now again being done by Professor Cresson, their only answer exhibiting itself in a request to be allowed to prove their case. The vilest slanders have been circulated, and by persons in close connection with the City Gas Works.

Our city papers have abounded in the grossest misrepresentations, contained in articles that *could* have had no other place of origin, and yet have we been silent. Henceforth there will, perhaps, be fewer of them, the public eye being now directed to their authors.

Professor Cresson himself most probably understands what he has said to-day in reference to the letter of Professor Mapes, and the use that we have made of it. If he does so, he is fortunate; we, with all our inquiry on the subject, having failed to discover what it is that he means to say. Of course, we do not answer. Desiring, however, that the public may arrive at a full understanding of all the facts that occurred at the time of the delivery of Dr. Cresson's statement of facts and figures, we have written to Professor Mapes on the subject, and hope soon to be enabled to lay his answer before the public, together with the paper of Dr. Cresson.

To Professor Cresson's suggestion of a reference of all these questions, we agree—conditioned, however, that it be made the first duty of the gentlemen selected, to take under their protection the proprietors of the Girard House, and see that they have granted to them *each and every one of the facilities that are, in New York and other cities, so unhesitatingly granted to persons who have private gas works.* A month has now been spent on this negotiation; spent, too, on one side in a manner that would do little credit to the poorest retail shopkeeper, and the matter is yet unsettled. We now insist, and we believe that the public will join with us in insisting that this contemptible persecution of public-spirited men, like Messrs. Presbury & Sykes, be at once and forever abandoned.

We are ready to meet these gentlemen, one or all, whenever they shall learn to treat us like gentlemen, giving us some option as regards time or place, or both. For the present, however, we have no desire for words. The time for them will come after we shall have enabled our fellow citizens to judge for themselves of the quality of the light, the simplicity of the machinery, and the cheapness of the manufacture. That done, they will be better enabled to judge of the truth or falsehood of the statements that may then be laid before them.

Signed, HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

Office of the Keystone Gas Company, Saturday, May 12.

Mr. Editor—The denial of my statements respecting the history of the Water Gas affair has imposed on me the unpleasant duty of presenting some of the proofs in my possession.

I therefore offer, in the first place, the testimony of a witness whose reliability will, without doubt, be fully endorsed by the Committee of the Keystone Gas Company. To which are added the testimonials of other parties, not in such close connection with that company. As these papers speak for themselves, I shall offer no comment upon them.

Respectfully, JNO. C. CRESSON,
Chief Engineer Philadelphia Gas Works.

May 14th, 1860.

"Dr. Cresson—*Dear Sir:* I enclose you the resolutions passed by our meeting of the Water-Gas Association, and trust they will meet with your approval.

"I shall call on you in a day or so, and have the matter fully understood.

Yours, truly,

(Signed) M. MOORE.

"Philadelphia, May 14, 1859."

"At a meeting held Nov. 2, 1859," (query, 1858?) "on motion, the chairman was empowered to name a committee of three to carry out the views expressed, whereupon he named M. Moore, Abraham Hart and Jas. G. Clark to be the committee.

"They were authorized to make the number of subscribers twelve, the six new members or subscribers to be composed of L. C., R. H. G., and Dr. Cresson, and three others that Dr. Cresson may name; five of the new subscribers to pay for the six, giving Dr. Cresson one share free, also 10 per cent., and not to exceed this amount of any royalty this company may receive for the use of Dr. Cresson's patent retort, in case it be used.

"Extracted from the minutes of said meeting.

(Signed) S. M. DAY, *Secretary.*"

"1. *Resolved*, That each share (excepting one for the agent of the patentee, Jas. E. Brown, and one intended for the patentee of the retorts) be assessed $500 each, payable $100 monthly, commencing 1st June next, for the purpose of paying $5000, as agreed with the patentee, in addition to one-twelfth share for relinquishing one-fifth part of the $100,000, or whatever sum may be payable under his contract with Marmaduke Moore, for the right of the States of Pennsylvania and Maryland.

"2. *Resolved*, That a committee be appointed to wait on Dr. Cresson and ascertain from (him) if the offer made Dr. Cresson 2d of November, 1858 (six months having elapsed), be accepted; if not accepted by the 14th instant that it will be considered withdrawn; and with power, if they think it desirable, to present him one share free of expense, for services given in making experiments in water gas.

"From the minutes of meeting held May 12, 1859.

(Signed) S. M. DAY, *Secretary.*

"Philadelphia, May 14, 1859."

The foregoing propositions having been declined on the part of Dr. Cresson by his attorney and counsellor, a subsequent oral renewal of them was again declined, in the following note:—

"November 8, 1859.

"Dear Sir: I communicated to Dr. Cresson your proposition with reference to gas retort. The same reasons which induced him to decline your former offer will compel him to decline the present one. He does not feel at liberty to enter into any arrangement involving on his part a participation in profits to be derived from the Philadelphia Gas Works, so long as he is officially connected with the works, and I certainly could not advise him to sever that connection at the present time.

"Thanking you personally for your kindness, I remain yours truly,

(Signed) H. S. H.

"M. Moore."

The subjoined unsigned copy of the contract before alluded to, was furnished by Mr. Moore. Whether it is exactly like that which was signed by the parties, I do not know, as I have never seen the latter, and have no recollection of having seen the second contract with the sliding scale. The originals of the letters addressed to me are over the full signatures of the writers, whose respectability will be admitted by any disinterested person to whom they may be exhibited, as they will be to all such as will call on me for that purpose.

CHESTNUT STREET, May 14, 1860.

DEAR MR. CRESSON: In reply to your inquiry of the 12th inst., I have to state that, whilst much regreting to be involved in this matter, as I cannot for a moment believe that Mr. ———, one of the signers of the Keystone Company's letter, would, for any consideration, make a statement which he did not believe to be true. Justice to yourselves requires me to say that his recollection is at fault, as, in a conversation with me, on Sixth street, near Minor, after complaining of the great delay he experienced in obtaining a certificate of the value of the water gas, I replied that Mr. Cresson would not give a certificate until he was fully convinced, after a long series of experiments, of its utility and economy. That Mr. C. had given a great deal of time and attention to it. To which he replied, that Mr. C. had been very kind and polite to him, and had afforded him every opportunity of witnessing the experiments as they progressed; that he had been anxious to compensate him for his kindness and services, by offering him an interest in the Water Gas Company, which he, Mr. C., had declined. I believe I have now answered the subject-matter of your inquiry, and regretting that the discussion of its merits should have involved a personal controversy,

I remain your friend,

(Signed) E. H. T.

PHILADELPHIA, May 14, 1860.

JOHN C. CRESSON, ESQ.—*Dear Sir:* We having observed, in Mr. M. Moore's statement, that he denies having ever offered you an interest in the water-gas patent, we beg leave to inform you that we have heard Mr. Moore say that an interest full paid had been offered to you and declined, and, also, that other interests were at your disposal for your friends.

Yours respectfully,

(Signed) L. C.
R. H. G.
J. P. S.

PHILADELPHIA, May 14, 1860.

PROFESSOR JOHN C. CRESSON, Chief Engineer of the City Gas Works—*Dear Sir:* I had a conversation with Mr. Moore soon after the water-gas experiments were begun in the City Gas Works, in which he mentioned his great obligations for your kindness in allowing the experiments to be tried, and said that an interest in it would be offered to you. I replied that you would most probably refuse to accept it, as I had known you to reject previous offers of that kind, and I had often heard you say that all such things should be rejected on principle.

(Signed) E. T. H.

The undersigned distinctly remembers having heard Mr. Marmaduke Moore express his intention to offer Prof. John C. Cresson an interest in the water-gas patent. (Signed) W. S. B.

Articles of agreement, made and entered into this twelfth day of August, A. D., eighteen hundred and fifty-eight, between James E. Browne, attorney in fact for J. Milton Sanders, of the city of Brooklyn, in the State of New York, of the first part,

And Marmaduke Moore, of the city of Philadelphia, of the second part,

Witnesseth, that the said party of the first part, for and in consideration of the sum of fifty dollars to him in hand paid by said party of the second part, the receipt whereof is hereby acknowledged, hath granted, bargained and sold, and by these presents do grant, bargain and sell, unto said party of the second part, all the right, title and interest of, in and to certain letters patent, granted by the United States unto said J. Milton Sanders, for the making of gas by the decomposition of water and a hydro-carbon, together with all the improvements that may hereafter be made thereto, and renewals granted therefor, for the States of Pennsylvania and Maryland, with all the profits and advantages to be derived therefrom, warranting and defending said letters patent unto the said party of the second part.

Said party of the second part does agree to pay said party of the first part the

price or sum of one hundred thousand dollars therefor, in the manner hereinafter set forth and on the following express conditions, viz.: that the said party of the first part shall first demonstrate, to the satisfaction of John C. Cresson, Chief Engineer of the Philadelphia Gas Works, that gas can be manufactured with rapidity on a large scale by said Sanders process, equal in every respect to the gas ordinarily made at said works, and not to exceed in cost more than thirty cents for each and every thousand cubic feet thus made.

So soon as the said Cresson shall certify that the results of said demonstration, as above expressed, have been successfully tested by him, and demonstrated to the entire satisfaction that the same can be done as above expressed, and, also, so soon as said letters patent for said States shall be duly and legally transferred, with said Sanders' warrantee unto said party of the second part, or to such other person or persons as he may designate; then and in such case said party of the second part does agree and bind himself by these presents to make payment of said sum unto said party of the first part, as follows, viz.: Ten thousand dollars thereof to be paid in cash, and the balance, ninety thousand dollars, in nine equal annual payments of ten thousand dollars each, with interest from date or delivery of said transfer.

Said party of the first part does further agree, in the event of a failure to demonstrate the above results, to return the amount of money received by him on account of this contract.

Mr. Editor: The statements recently made by Messrs. Carey, Moore, and Hart, professing to give an account of the action of the Trustees of the Philadelphia Gas Works on the subject of Sanders' water gas, differ so widely from the facts, that I place at the disposal of your readers two letters, which will enable them to form a correct judgment between the parties. I desire particular attention to the dates of these letters, and will only remark that they had been for some time in the possession of the Keystone Gas Company when the publication of their article in your paper of the 5th was made.

I will state further that the proprietors of the Girard House disclaim all connection with the Keystone Gas Company, in the proposed trial of water gas at their hotel, and that arrangements, entirely satisfactory to Messrs. Presbury, Sykes & Co., for supplying them with gas from the city works, in case of the failure of the water gas, were promptly made by the committee of the trustees and the engineer of the Gas Works.

F. FRALEY,
Chairman of the Special Committee.

Office Philadelphia Gas Works, March 24, 1860.

Henry C. Carey, Esq., President Keystone Gas Company.

Sir: Your letter of the 22d inst. has been received and considered by the Committee of the Trustees of the Philadelphia Gas Works.

As the proposition made in your letter of the 20th of February, 1860, addressed to our President, has been withdrawn, and a new one submitted, the committee instruct me to place the several questions which have been the subjects of correspondence between us, again before your board before replying to your new invitation.

In your letter of the 20th of February, you inquire whether the process of Dr. J. Milton Sanders is included in those made the subject of comment by our chief engineer in his last annual report.

To this question we replied affirmatively, and stated that one of the processes so referred to was that of Dr. Sanders, the apparatus for which had been furnished by, and put in operation by, his agent, Mr. Brown.

We now desire to add to this that, after making some trials, Mr. Brown failed to succeed in obtaining any satisfactory results, abandoned the experiments, and stating that as he supposed his failure had arisen from a want of practical skill and knowledge of the art of gas making, requested our engineer to make further trials of the apparatus and process of Dr. Sanders thus introduced by him.

With an anxious desire to get out of Dr. Sanders' process all the advantages that it was claimed to afford, we patiently prosecuted the trial of it for months, and at length convinced ourselves that it could not be relied on as an economical and regular process for gas making.

The comparative results obtained from it are as follows:—

The cost of making coal gas at our works in the year 1859, for the whole quantity produced, including the cost of materials, labor, repairs of apparatus, purification, and office expenses, connected with the manufacture, delivered in the gas holders, and there ready for distribution and sale to consumers, was considerably less than the cost of the so called water gas of Dr. Sanders, made in the most economical and skilful way in which we could apply his process, including the same items and delivered in the gas holder.

The difference in favor of the coal gas being more than ten per cent., and whenever the attempt was made to reduce the cost of water gas below this scale it resulted in destroying its illuminating value and leaving in darkness the place depending on it for light. This occurred so frequently as to make its public use entirely inadmissible.

It is to be noticed here, that the cost of the coal gas is as manufactured on the largest scale, while the cost of the water gas is upon the careful and closer working of nicely adjusted experimental apparatus, which generally gives the most favorable results, rarely realized in working on a large scale.

This gives an approximate comparison of the cost of gas made from coal and from water and rosin, but the latter has had all the advantages of the supply of fuel at the cheap rate at which it is furnished from the coke of a coal gas works.

Were it necessary to purchase fuel for making the water and rosin gas (the process of Dr. Sanders), in markets not supplied with coke at the price at which we sell it, the cost of the Sanders would be greatly increased.

We have above the relative cost of the two gases delivered in the gas holders; from that point there will be of course the same outlay for street mains, service pipes, meters, inspection and office expenses, and the cost of repairing the distributing apparatus. And projectors like Dr. Sanders very seldom take any of these items into the account when they speak of the cost of making gas. To these, of course, should properly be added the interest on the capital expended, whether it is to be paid in the shape of dividends on stock, or of interest and sinking funds for loans, as is the case in our gas works.

The public are thus misled as to the real state of the case, and find, only when it is too late to remedy it, that they have been deceived.

Assured by the careful and long continued experiments which we made with Dr. Sanders' process, that he was mistaken as to its value and economy, we did not deem it advisable to recommend to the trustees the acceptance of your proposition of the 20th of February. We had been informed that a trial of Dr. Sanders' process and apparatus at the gas works in Wilmington, Delaware, had not proved satisfactory, and that when your proposition to us was made, the apparatus and process were on trial at the Northern Liberties gas works in this city. We have since learned that at these last named works the results have been quite as unfavorable as we found them, and that therefore there was nothing which our own experience, or the experience of any one who had really made gas by Dr. Sanders' process, supplied, that would warrant a fresh expenditure of money and a new trial by us.

We supposed that in a friendly conference all these points could be considered, examined and explained, and that if, after thus hearing us, your board still felt inclined to press their proposition, we would make no difficulty in gratifying them, if they had any new feature in the process or apparatus to propose, or even if they could point out any part of Dr. Sanders' process that we had omitted to try or had failed to understand.

Having thus cleared our own record, I am directed by the committee to say that they have respectfully considered the new proposition made in your letter of the

22d inst., and that they are prepared to recommend to the trustees the adoption of the following resolution:—

Resolved, That whenever the Keystone Gas Company shall notify the Trustees of the Philadelphia Gas Works that they have erected and put in operation, on neutral ground (by which is to be understood a place or building entirely separated from and incapable of receiving a supply of gas from any other gas factory), an apparatus for the purpose of manufacturing gas by the process patented by Dr. I. Milton Sanders, and are actually producing illuminating gas by said patented process, the said trustees will provide a skilful and reliable process, and report the results obtained.

As we have now placed the subject on the basis proposed by you in your letter of the 22d inst., we will submit the above resolution to the trustees, at their next meeting, which will be held on the second Friday in April, unless in the interval you should desire a conference or correspondence with us, for a more satisfactory plan for determining the real value of Dr. Sanders' process.

I am, very truly and respectfully,

F. FRALEY, *Chairman.*

OFFICE PHILADELPHIA GAS WORKS,
April 28, 1860.

HENRY C. CAREY, Esq., President Keystone Gas Co.—*Sir:* I have the pleasure of informing you that at a meeting of the Trustees of the Philadelphia Gas Works, held on the 27th instant, the following resolution was adopted on the report and recommendation of the special committee appointed by the Board to confer with your Company.

Resolved, That whenever the Keystone Gas Company shall notify the Trustees of the Philadelphia Gas Works that they have erected and put in operation on neutral ground (by which is to be understood a place or building entirely separated from and incapable of receiving a supply of gas from any other gas factory), an apparatus for the purpose of manufacturing gas by the process patented by Dr. J. Milton Sanders, and are actually producing illuminating gas by said patented process, the said trustees will provide a skilful and reliable person who shall be authorized to watch the process, and report the result obtained, to the said Trustees, and also to the Keystone Gas Company.

By this resolution the plan mutually heretofore agreed between us, as stated in your letter of the 29th of March, has been adopted, and we trust will be satisfactory to your Company.

But the committee being desirous of convincing your Board that they have no other object in view than the truth, agreed to recommend to the Trustees, and the latter adopted, the following resolution:—

Resolved, That the special committee on the proposition of the Keystone Gas Company be, and they are hereby authorized to cause the experiments for testing the value and economy of Dr. Sanders' process for making gas from water and rosin, to be repeated at the gas works, at the expense of the gas works, and in such way as in the judgment of said committee will give another opportunity for the Trustees, the Corporation of the City, and the Keystone Gas Company, to determine the cost of making gas by said process, and its reliability as a mean for illumination.

I have also been directed to inform you that the communication from your Company, and the enclosed proposition offering to make certain contracts with the Trustees, have been referred to our committee, and that we are prepared to name an early day for a meeting with a committee of your Company, for considering the matters to which they relate.

And in reference to the proposed experiments for testing the water gas at the Girard House, the committee will at once make such arrangements for separating the supply of gas from the city works as will insure freedom from all suspicion while the experiments are in progress, and at the same time provide, upon very short notice, the supply of city gas to the same building, by restoring the connections in such way that no great inconvenience can possibly be sustained by the proprietors of the Girard House.

The ordinances of the city regulating the supply of gas to buildings require these precautions at the hands of the trustees, and within the powers they can legally exercise, every facility shall be afforded for the proposed experiments.

The application to which you refer for a permit did not reach the Board until last evening, and the action of the officers to whom it is stated the application was made, was the proper one, as they had no power to grant it.

Yours respectfully,

F. FRALEY, *Chairman.*

Mr. Editor: I propose now to take up a few small matters which may seem to have but little importance, but are of value whether great or small.

In the Keystone Committee's letter of Monday, or rather in the second letter of a member of the committee to himself, certain statements are made, apparently without a definite knowledge of their significance. In quoting the words of Professor Cresson, Mr. Hart attributes to him an expression he seldom uses, and never in such connection, as he finds it a term seldom applicable to things that come within his experience. I allude to the word "*perfect.*" The expression that was used on the first occasion alluded to in Mr. Hart's letter was: "The experiments are not *complete;* the yield of gas is abundant, but its quality is bad and uncertain, and the cost of repairs undetermined in amount."

On the second occasion, when the gentlemen from the Northern Liberties Company visited the works, previous to their trial, they were told, in the presence of two of the Keystone committee, "that the experiment was then considered *complete,* so far as the city works were concerned; that gas of good quality had been made, but its cost was not less than coal gas; and the unfortunate trait of fickleness still continued, and occasionally involved us in darkness." The small episode of the gasholder embraces so much more of the ideal than of the real as to need no criticism. The statements then made to those gentlemen were then true, are true now, and were equally true when they were alluded to in my annual reports to the Trustees, in January, 1859, and January, 1860.

I leave it to Mr. Hart to harmonize with himself and colleagues the contradictory statements in which the *body* avers that no "advice" had been received up to the 5th of the present month, showing any higher cost of the gas than the 37 cents deducted from Professor Mapes' figures, while the *member* admits that he had, from Prof. Cresson, most unwelcome advice nearly six months ago, showing its cost to be higher than coal gas.

That this unpalatable advice was communicated to the entire body is made probable by the fact that they immediately determined to change the scene of experiment to a spot where a more favorable account of *cost* might be obtained. These things took place some months after the low cost in Prof. Mapes' report had been denounced at a meeting of their own body as incorrect, and some months prior to their recent public declaration that they had never had any advice of a higher cost.

Respectfully,

JOHN C. CRESSON,

May 15, 1860. *Chief Eng. Phila. Gas Works.*

THE GAS QUESTION.

No. IV.

Mr. Editor: Looking back to the opening of this discussion with Professor Cresson, its cause exhibits itself in the statement made by us a fortnight since, that, "to this hour the parties for whom the work was undertaken, have had no advice of any increase in the quantity of materials or of labor required for producing any given quantity of gas, all those figures yet remaining, so far as they are informed, precisely as they were given to Professor Mapes." Firing up at this, the Professor rushed into print, denying that he had ever undertaken to supply such information. Now, he finds a contradiction of our statement in Mr. Hart's report of his own naked assertion, that gas made from water was dearer than that made from coal, contradicted as it had been by an admission previously made, after many months of trial, to the same person, that he had found "a saving of twenty-five per cent." A cause must be sadly weak that needs to be so defended.

Professor Cresson having undertaken to deny the accuracy of the statements of Mr. Hart, the latter here gives his views in regard to the corrections that have been suggested.

H. C. Carey, Esq. *Dear Sir:* Mr. Cresson replies to my letter, saying that I have attributed to him "an expression he seldom uses."

Now, sir, however he may use that expression, whether frequently or seldom, I say, most emphatically, that he *did* use it in his interview with me; that, further, everything given in my letter concerning both interviews is exactly stated and is perfectly true; and that, as an evidence of my sincere conviction of its truth, I shall attach my affidavit to this declaration.

To show you further, how erroneous is Mr. Cresson's statement in regard to the second interview, I call your attention to the following passages:—

"On the second occasion, when the gentlemen from the Northern Liberties Company visited the works previous to their trial, they were told in the presence of two of the Keystone Committee, 'that the experiment was considered *complete* as far as the City Works were concerned, and gas of good quality had been made, &c.'" "The small episode of the gas holder embraces so much more of the ideal than the real as to need no criticism."

In reply to this, I say that what I stated about the gas holder was so far from "ideal," that you will find at foot the verification of my exact words and language, by the gentleman who was present at the interview. There was no mistake, and there could be no mistake. He said: "You are right, Mr. Hart; I did not think of that." This acknowledgment, at the time, made an indelible impression on me, because I thought I understood his motives in suggesting the idea of "unreliability."

To show you further how his recollections and statements are at fault, I assert that no "gentlemen from the Northern Liberties" were present, and now challenge him to produce any such gentleman to say that he was ever present at any interview between Prof. Cresson and myself. So far as I am concerned, then, his letter falls wholly to the ground.

A. HART.

Philadelphia, May 17, 1860.

Abraham Hart, being sworn, says that the foregoing statement is true.

A. HART.

Sworn and subscribed before me, May 17, 1860. JOHN B. KENNEY,
Alderman.

The statements made by Mr. Hart, in his letter of May 8, respecting his second interview with Prof. Cresson, are correct in every particular, having been present during the conversation between Mr. Cresson and Mr. Hart.

MARMADUKE MOORE.

Philadelphia, May 17, 1860.

As has been seen, Mr. Moore has denied the truth of each and every of the assertions of Professor Cresson, in reference to their understanding when the latter agreed to act as referee. We have denied the truth of his assertions in reference to the introduction of the Sanders process at the City Works, holding ourselves ready to furnish, when required, proof conclusive of a state of facts directly the reverse. Of these things, however, directly connected as they are with the question now before us—the performance of his duties as referee, empowered as such, to decide *between the patentee and those who had proposed to buy the patent*—Professor C. takes no notice, contenting himself with producing statements in reference to the proceedings of these latter parties *among themselves.*

How far anything done by one party to this reference could tend to relieve him from the performance of his duties to both parties—that duty consisting in so deciding that both should clearly understand their respective rights and duties—we really do not see. One thing, however, is very clearly obvious to us, and that is, that none of the parties who have now been summoned into court for the purpose of proving the nature of the relations existing among the proposed purchasers, have had the courage to give their names, even in those cases in which Professor Cresson would not himself have been ashamed to produce the names before the world. Those papers having been produced with a view to counteract the effect of the statements of Mr. Moore, he has deemed it right to present his views in reference to it in the following letter:—

To Henry C. Carey, Esq., &c.: Ten days since Prof. Cresson published a series of statements, that, had they remained uncontradicted, would have left upon the public mind the idea that I had been offering bribes with a view to induce him to make a false report, and thus deceive the public.

The absurdity of all this became most obvious, when it had been shown that I was deeply interested in having a perfectly fair report, having bound myself for the payment of a large sum of money, whensoever the patentee should prove his case, and not till then. Under such circumstances, had I needed to pay Professor Cresson at all, my true course would have been to make it for his interest so thoroughly to examine the matter, as to set at defiance all chance of error in favor of the patentee.

Justice to myself required, as I thought, an answer to the Professor's statement. That reply has been made, and in it I have traced the whole transaction, step by step, as conscientiously as I was capable of doing, placing the matter upon a footing wholly different, and showing, as I think, that not only were his statements not in accordance with the facts, as they did occur—but that they were as much opposed to all that could reasonably be supposed to have occurred.

To my statements of facts in regard to the reference—to the duties assumed by him as referee—and to the rights of the parties by whom the reference had been made—Prof. Cresson now makes no reply. In its stead, however, he has printed various papers, to which their authors have not affixed their names; but with what view they are published, unless in my defence, I am as yet unable to conceive. Last week he desired to have the world believe that I had sought to induce him to engage with me in an attempt at fraud. This week he exhibits me endeavoring to make it to the interest of the Messrs. Cresson to study the subject with the utmost care, and thus relieve me from the risk of loss. For this defence I thank him, accompanying my thanks, however, with the question: "Why, with all these papers in his possession, did he last week give so much time and words to the effort to make the world believe that I had sought to obtain a false report?"

In all that has passed between Prof. Cresson and myself on this subject, there has been manifested upon my part the most entire confidence. Feeling that I needed his advice, I asked it on all occasions, and invariably followed it. When he and his son suggested additions to our number, I followed their advice, little supposing that what then was done would, at a future time, be published by my friend

in proof of fraud. That he found in it nothing wrong is obvious from the fact that not only was it not then rejected, but that, some months later, it became necessary to call upon the parties either to accept our propositions (now printed by Professor Cresson), or to release us from them.

In regard to the letter of my friend, E. H. T., I have to say that he has entirely misunderstood me. As I never did make any offer to Prof. Cresson, it is quite impossible that I could have told him I had done so.

To the papers published by Prof. Cresson there are only initials given. Why were not the names given in full? Was it because of the fear that among them might be recognized those of Prof. Cresson's friends, who had proved themselves most active in getting up the outside pressure, by means of which directors have been forced, against their better judgment, to shut out the water gas? Was it because of the fear that we might recognize the names of persons suggested to us as associates by the Messrs. Cresson—persons who sat at the meetings of our association, assisting at the discussion of a proposal made to the Company for the purchase of the charter of "The Metropolitan Gas Company" of the city of New York, and then, without notice to their associates, accepted it for themselves and other of the Messrs. Cressons' friends? Or was it, perhaps, from the fear that we might recognize therein the name of a person who, when a rumor of their private negotiation had reached the ears of his associates, gave positive assurance to the contrary, and then at once united in the purchase?

For many years I entertained the most profound respect for Prof. Cresson. Now, however, when I study his recent course, I can but express my extreme regret.

I observe glaring errors in the papers as published by Prof. Cresson, and especially as regards dates, but do not deem it necessary now to waste time upon the exposure of them.

MARMADUKE MOORE.

May 17, 1860.

Leaving Professor Cresson to reflect upon this letter, we turn now for a moment to that of Mr. Fraley, "chairman of the special committee," who has undertaken to show how widely our statements "differ from the facts"—for that purpose publishing two of his own letters, while retaining in his desk the replies by help of which his readers might have arrived at a proper understanding of those facts. Had he given both sides, they certainly would have been enabled to appreciate the remarkable ingenuousness displayed in speaking of our withdrawal of a proposition that never has been "withdrawn even for a moment;" and as certainly would they have seen the perfect accuracy of our brief summary of an almost three months' correspondence. Cannot the chairman be persuaded, even now, to publish all the letters, and permit his readers fairly to judge between us?

One-sided as is his publication, it nevertheless enables us to see:

First—That the committee has been made to endorse the whole of Professor Cresson's statements in regard to the introduction of the Sanders process at the city works—statements whose falsehoods we have denounced, and hold ourselves prepared to prove.

Second—That, at the close of a three months' correspondence, the committee had succeeded in adjourning to another time and place an inquiry into the actual facts of water gas production, that, with the consent of the proprietors, we should have preferred to see conducted at the Girard House, in the presence of the people the committee represent.

Third—That after having been distinctly notified that the Keystone Company would submit to no further experiments at the city works, the committee, *with a view to future publication,* kindly volunteered an invi-

tation to further "experiments" at those works. In making reply to this, it was difficult to treat it as other than an act of sheer impertinence.

The Chairman assures his readers "that arrangements entirely satisfactory to Messrs. Presbury, Sykes & Co., for supplying them with gas from the city works, in case of failure of the water gas, were promptly made," &c. &c. We have read this, we must confess, with much surprise—knowing, as we do, that, on the first application of those gentlemen to the proper officer, they received for answer that the Chief Engineer had given express instructions to notify them, whenever they might apply for a permit of connection, that each and every city meter would be removed as soon as the connection should be made; that from the position then assumed the recession has been made with the utmost slowness; that the chairman of the committee has himself personally interfered to induce the proprietors not to introduce the water gas; and that, at the moment when our letter appeared in print, it remained still doubtful whether, under the restrictions even then existing, it would be proper to undertake to light the house. In all this there seems to have been but little of that promptitude of which the chairman speaks. That it will be better in future, and that to the liberal proprietors of the house will yet be granted all the facilities which are so freely accorded in other cities, we have now no doubt—*the public eye having been directed to the subject.*

The water gas may be all that it is described to be by Professor Cresson. Were it so, however, would he and his friends labor so indefatigably in the effort to prevent it from affording proof of the fact? May not their fixed determination as far as possible to prevent its introduction, be regarded as affording proof that they have no real faith in the statements they have published?

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,

Committee.

Office of Keystone Gas Co., *Thursday, May* 17.

THE GAS QUESTION.

No. V.

Mr. Editor: Since the appearance of our letter in your paper of yesterday, we have been advised by the proprietors of the Girard House that we had attached, to what had passed between them and Mr. Fraley, more importance than it had merited. Such being the case, we cheerfully withdraw what was said on that subject, feeling no necessity for even the slightest exaggeration of the real facts. On the other hand, we have to say, that even to the moment of the appearance of the chairman's letter, the officers of the Board were still insisting upon conditions to which the proprietors, in justice to themselves, felt bound to refuse acceptance.

We have now to ask the attention of your readers to the following passages in Professor Cresson's first letter, given in your paper of the 8th inst., professing to describe the course pursued by himself and his son on the occasion of the visit of Prof. Mapes, in February, 1859:—

"While these trials were in progress, Professor Mapes, of New York, visited the works and asked for information as to the results obtained. I declined giving him

any statement on the subject, as nothing conclusive in their favor had yet been obtained, and invited him to make an examination for himself; for which purpose he was made welcome at the works for as many days or weeks as might suit his own convenience, with full permission to weigh, measure, and inspect all that he desired to scrutinize.

"He remained a few hours, witnessed the process then going on, and took from the different subordinates their replies to his interrogatories, which, as I understand, embraced only such points as he judged to be important. These interrogatories I declined to answer or criticize, thinking the free permission to examine for himself, to be all I ought to grant; and I learned, from the persons to whom he applied, that they limited their statements to the points on which they were interrogated, without pretending to furnish complete or definite information; and on some of these points they could give nothing more than an opinion or conjecture, as there was no actual experience on which to base the reply."

Knowing that this statement was, in many respects, entirely opposed to the real facts of the case, and believing it to be so throughout, we addressed a letter to Professor M., accompanying it with copies of the several published letters, and asking him to do us the favor to furnish us with an account of what it was that really had occurred. To this he has replied as follows:—

New York, May 13, 1860.

Gentlemen: Your favor, stating that Prof. Cresson had charged yourselves and me with having improperly used the statistics furnished by himself and son, has just reached me, and in accordance with your request I hasten to reply.

I have also read the articles sent me, and am more than surprised at the tone of Prof. Cresson's remarks on the subject. He evidently mistakes the quotations taken from my report for assertions of your own, not recognizing them as part of that report, all of which was made, distinctly, upon data either approved by him, or by his son in his presence, and without his dissent.

Some time since I sent you a list of questions propounded by me to Prof. Cresson, with his replies, many of which, you will find, are in the handwriting of his son, Dr. Cresson, and written at the request of his father, from an evidently official record then before him. My report, you will perceive, is entirely within the limits of these statements, as I felt it should be, since the parties for whom I acted desired a safe estimate on which to decide value, &c.

In reply to the other questions contained in your letter, I would state that when I visited Philadelphia, in February, 1859, at the request of a company here, I was in no degree predisposed to view favorably the Saunders process of water-gas manufacture, but from my experiments, at your city works, as well as by what I saw and heard there, I was compelled to change my views. The workmen who assisted me, and Mr. Gay, an assistant engineer, all spoke in high terms of the superior quality of the light, and its entire evenness after the introduction of the rosin. Nothing was said of any "unreliability" in its illuminating power, and I discovered none. Its beauty and strength were the theme of praise, and, indeed, prudence required that I should, in a measure, qualify the favorable opinions that seemed to prevail among all the officials at the city works.

The estimates given by me should not be doubted by Prof. Cresson, for, at the time referred to, they in no way exceeded in economy the evident result of statistics furnished to me under his approval, and from which my statement is made.

It is true that these facts were not *consecutively* offered by Prof. C., but his admissions, when arranged and fairly analyzed, could lead to no other conclusions than those given in my report, which being a published tabular aggregate of details, approved of by Prof. Cresson, becomes simply a question of arithmetical accuracy.

Should you find the publication of this letter necessary, you will oblige by appending my report, without which it cannot be understood.*

I remain, gentlemen, yours respectfully,

JAMES J. MAPES.

* For this Report see *ante*, p. 17.

This simple narrative flatly contradicts each and all of the assertions of Professor Cresson, exhibiting, as it does, his son and himself actively engaged in furnishing the information which, according to the assertions now made, Professor Mapes had been left to gather from the workmen, unassisted by either of the Messrs. Cresson—"who declined to answer or criticize, thinking the free permission to examine for himself to be all" that should be granted. Comment upon such assertions in the face of the letter that has now been given, would seem to be scarcely needed.

At the date of the visit of Professor M.—the trial of the water gas having then been half a year in progress—not only had the disease of "unreliability" remained undiscovered, but, as we see, the admiration of the beauty and strength of the light by "all the officials" was expressed in such decided terms as to render it expedient for their visitor somewhat to "qualify the favorable opinions that had been expressed." Singularly enough, the time at which those opinions were so highly favorable, is not *very* distant from that at which Professor Cresson *now* represents himself as expressing himself to Mr. Hart in the words that follow: "The experiments are not *complete;* the yield of gas is abundant, but its quality is bad and uncertain, and the cost of repairs is undetermined in amount." The Professor should, as we think, have a better memory.

Qualified in the manner prescribed by Professor M., his report was given to the world in the month of May or April last—precisely as it has lately been laid before your readers. Without delay, a copy was handed by Mr. Moore to Professor Cresson, by whom it remained unquestioned until, eight months later, he had arrived at the remarkable discoveries, that gas made from water was dearer than that made from coal—the product of the former, too, being "unreliable!"

In proof of the superior cost, we are now assured that "the figures presented in the official records, in conjunction with the daily return sheets and repair accounts, show the cost of water gas to be about three times as much as indicated by the figures now set forth." That this is all quite true, we do not question; but as little is our doubt that not only do "the figures" fail to prove the assertions of Professor Cresson, but that with a brief examination of them we shall be enabled to make our readers comprehend the manner in which these "figures" can be made to tell untruths.

Below are given the questions propounded by Professor Mapes, with the replies of Dr. Cresson, given in his own handwriting—reference to which enables us to see that in a large establishment one man only is required for ten retorts. In the little experimental establishment at the city works there was, however, during much, and perhaps most of the time, but *one* retort—that one requiring the constant attention of *at least one man.*—The time tables, consequently, show *ten times the quantity of labor really required*—thus at once carrying up the cost of production from 37 cents, as given by Professor Mapes, to more than 70 cents, or nearly double. Again, let us suppose two retorts to have been cracked in consequence of a defect in the flue; a third one set aside when almost new, for the purpose of introducing, *without consultation with the agent of Dr. Sanders,* the cellular retort which passes as the invention of Dr. Cresson; and those three finally replaced by a fourth, that remained some time in use. Let us next suppose all this machinery, and all the cost of putting it up, to stand charged against the product of a single retort, and we shall find little difficulty in understanding how a "repair account" might be largely

swelled—if only for the purpose of proving to members of City Councils that gas made from coal or wood was cheaper than that made from water.

Again, let us suppose this little workshop to be for months employed in experiments made *for the purpose of trying to evade the patent of Dr. Sanders*—the referee thus seeking to profit by the information furnished him in that capacity with a view to *destroy the value of the property of a party to the reference.* Further, let us suppose all his efforts in that direction to have been fruitless—great expenditure of materials and labor being followed by total failure in the product. Admitting, now, these suppositions to be correct, might we not reasonably expect an increase in the charges against the water gas, accompanied by diminution in the *average* yield—thus producing the state of affairs required for enabling the referee to turn to his books, and show what would appear to be proof conclusive against the value of the process of Dr. Sanders?

Professor Mapes gives, as the yield of a retort, 328 feet per hour. Commenting upon this, Prof. Cresson states "the average yield per retort from the commencement of the water-gas experiments down to the conclusion of the examination of Prof. Mapes, to be less than one-third of the quantity assumed." Than this nothing could be more probable—the facts thus presented, however, only furnishing further evidence of the facility with which true figures may be made to tell the reverse of truth. By reference to the paper given at foot, it will be seen that the retort that had been used for the experiments was a small one, capable of yielding little more than 200 feet per hour. Deducting from this possible yield the time expended in experiments as to the combinations required for producing the best quality of gas, and that required for resetting so many retorts, as well as for alterations required in all new machinery, we can readily see why the *average* of product may have been no more than has been stated by Professor Cresson; and yet, the statements, as now paraded by him in proof of the difficulty of obtaining water gas, prove anything else than true.

What Professor Mapes sought to know was, not what had been obtained by help of a little experimental machine, but what could be obtained under ordinary circumstances. Inquiring of Dr. Cresson in regard to this, he received for answer, as we see, that with the usual large retort, the yield might be taken at 9000 feet per day, or 375 feet per hour—giving this as his deduction from six months' experience at the City Works. Previously to this, the gentleman who, under the direction of the Messrs. Cresson, had had the management of the experiments, had said, *writing on the part of Dr. Cresson*, that all calculations as to the yield of one of his retorts, employed in making water gas, must be based upon "*a minimum working capacity of three hundred and fifty feet per hour.*" Anxious not to overrate it, and deeming it expedient to "qualify the favorable opinions" expressed to him by "all the officials at the city works," Professor Mapes estimated the product at an average of only 328 feet per hour; yet Professor Cresson now denounces his report as having been wholly unauthorized by the existing state of facts!

Need we wonder at the surprise expressed by Professor M. at the tone of the articles we had sent him? Can any one who reads this paper fail to be surprised at seeing so extraordinary a perversion of facts as that we have here exhibited? Is there among all who may chance to read it even a single one who can find in the course pursued by Professor C. the

slightest evidence of that frank and honorable conduct which ought to characterize the chief of such an establishment as our city gas works? Scarcely one, as we think.

Below are given the questions of Professor Mapes, and the answers thereto given by Dr. Cresson.

(Signed) HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY, *Saturday, May* 19.

Q. What are the dimensions of the large cellular retort now making water-gas?
A. Four feet six inches long, inside dimensions.
Q. What is the cost of charcoal?
A. We are selling it for eight cents per bushel.
Q. What is the product per day of gas from said retort?
A. From four thousand to six thousand feet per day.
Q. How many such retorts can be placed advantageously in a bed?
A. Two or four, as may be desired.
Q. How many such retorts could one man attend to?
A. Ten, with two streams each.
Q. How much rosin to one thousand feet of gas, as average.
A. Fifty pounds average.
Q. How much fuel is required by retorts making water-gas, as compared with same retorts making coal-gas, and what number of bushels do each need specifically?
A. About same per M as coal-gas.
Q. How much coal-gas is made from each pound of coal?
A. Gas per bed, *maximum*—First Ward. 20,700 to 3 retorts—4.50 to pound coal and 26 bushels coke. Ninth Ward—15,800 to 3 retorts—4.40 to pound coal and 28 bushels coke.
Q. How many pounds of coal would be used per day in a retort of same dimensions as the cellular retort?
A. Small cellular retort, 2200 pounds; large, 4600 do.
Q. How many men to each number of retorts of coal-gas are now required?
A. Four men for 24 hours to 9 retorts and 3 fires.
Q. How much water-gas is produced by each retort of same dimensions as coal-gas retorts?
A. Short retort yields, say 5000 per day; long retort may be estimated at 9000 cubic feet.
Q. Price of coke?
A. Five cents per bushel.

THE GAS QUESTION.

No. VI.

MR. EDITOR: "Permission to make the trial was given, the apparatus was sent to the gas works by an agent of Dr. Sanders, and set up under his direction; he remained here some weeks and made an attempt to manufacture gas, which proved a failure, the apparatus breaking down as soon as it began to yield any product. After a second trial, with no definite result, the parties interested asked whether I would consent to the erection and trial of a retort, under the direction of the skilled employés of the gas works, whose greater practical knowledge might give it a more successful issue; at the same time expressing an opinion that the cellular retort, then in use for making wood gas, would work better than that of Mr. Sanders."

Such is the history of the introduction of the Sanders process into the City Gas Works, as given by Professor Cresson in his first letter, a fort-

night since. What is its real history we propose now to show; having done which we shall ask the decision of our fellow-citizens upon the question whether, here as everywhere, Professor Cresson has not been largely indebted to his fancy for his facts.

The arrangement with that gentleman was made early in June, 1858. Some days later, an order was issued from the city works for a retort of the kind that had been agreed upon between him and the agent of Dr. Sanders, *no apparatus of any kind having ever been sent to the works by either Dr. S. or his agent.* A fortnight later, Dr. Cresson writes the agent as follows:—

PHILADELPHIA, June 21, 1858.

DEAR SIR: The retort has just been received, and we are setting it with all dispatch. We would like to see you in reference to the connections for oil, &c., some time this week. Very truly,

C. M. CRESSON, M. D.
Per W. S. BURRIS.

We have here two important facts: First, That at the earliest possible moment, the "apparatus" had already reached the hands of "skilled employés of the city gas works," who, *in the absence of Dr. Sanders's agent*, were employed in "setting it up;" and second, That those "employés" were then seeking directions at the hands of that unskilled agent who, *according to Professor Cresson*, must have already expended "some weeks" in attempts at manufacturing gas, whose only result had been utter "failure." Where may those sad "weeks" be found? Nowhere, as we fear, but in the imagination of Professor Cresson.

The preparations of the "skilled employés" having been completed, the agent of Dr. Sanders was summoned here to see and approve of them. That having been done, the manufacture commenced, and water gas was made, for the first time, on the 17th of July, not four weeks from the day on which the receipt of the retort had been announced by Dr. Cresson.

Three days later, an accident happened to the retort which had been furnished on the order of Professor Cresson. It cracked—the cause of this, as subsequently ascertained, being found in defective construction of the flue. After some days spent in the effort to patch it up, it was concluded that a new one must be had, orders to that effect being issued on or about the 26th. Five days later (July 31) Mr. Wiegand, the "skilled employé" to whom Professor Cresson had committed the superintendence of the experiment, advises the agent of Dr. Sanders, then at Brooklyn, that the new retort has been "promised for the 2d proximo," closing his letter with the expression of a hope "that the experiment may conclude *as satisfactorily as it has been demonstrated already.*" We Italicize these latter words, Mr. Editor, desiring that your readers may carefully compare them with the fanciful descriptions given by Professor Cresson of the repeated failures of the agent of Dr. Sanders. Ten days later, August 10, he again writes the agent, addressed to Brooklyn, as follows:—

"DEAR SIR: The new retort is set and fired up. The hydraulic main has been opened and thoroughly cleaned; in fact, every precaution has been taken to insure a perfect working of the apparatus. Please come on Thursday, 12th inst. As far as I am able to judge, it will be ready by that time."

What took place in the following week is shown in the following letter from one of the most estimable of our citizens, one who has never, even

for a moment, had any pecuniary interest in the decision of the question whether gas can or cannot be made more cheaply from water than from coal or wood.

No. 13 South Front Street, May 17, 1860.

James G. Clark, Esq. *Dear Sir:* Your note of the 14th is before me, calling my attention to my having accompanied you in the month of August, 1858, to the city gas works, to witness gas made from water, and asking me to state what took place.

I have a perfect recollection of going there with you in the summer of 1858, but at this moment I cannot recollect the month. When we entered the gate you turned to the left, I following, to the office of the gas company. You were in advance, and, as I was entering, you had a person with you whom you called Mr. Wiegand, that you said was in the employ of the city gas works. We went up stairs. On entering the room Mr. W. lighted a gas burner, and closed the door or window shutter to darken the room (it was about 6 P. M.). He then lighted another burner, and asked which was the best light. We pointed to one as the brightest, lightest color. He said that was the gas made by Mr. Brown from water; the other was from the holder or reservoir that supplied the city. We were then taken down into the works, where I was introduced to Mr. Brown, who showed us the whole apparatus for manufacturing the gas, and explained the operation. There were present, I think, about fifteen persons, visitors. As we were about to leave, Mr. Brown asked some two or more persons if they would do him the favor to meet him there the next morning, at nine o'clock, to witness the delivery to Mr. Cresson of the whole works, that he might have the entire control and possession of the apparatus.

Some one present (perhaps yourself) explained to me that Mr. Cresson's opinion or certificate was wanted as to how low the gas could be made, and that he would not examine it until it was placed entirely under his control. Many persons present during our examination made remarks as to the low figure at which the gas could be made.

Yours, respectfully,
MOSES KEMPTON.

The picture here presented is, apparently, of the precise date of that presented by Professor Cresson, in which the agent of Dr. Sanders, after remaining here "some weeks," engaged in abortive attempts at producing gas, is represented as inquiring if Professor C. "would consent to the erection and trial of a retort under the direction of the skilled employés of the gas works." In the one, we see him triumphing in the success achieved, and asking his friends to attend the ceremony of transferring the little and successful work to the hands of Professor Cresson. In the other, he is exhibited as on his knees and imploring aid from "skilled employés," who might "give it a successful issue." In the one, we see Professor Cresson declining to commence the experiments until the agent should have placed the works under his entire control. In the other, he is granting to the agent "permission" to make the experiments upon the results of which he was to decide. These pictures are very widely different. Which of them is the true one? Let us look further, and see if we can ascertain.

Ten days later, August 28, we have a letter from Mr. Wiegand, Professor Cresson's engineer, addressed to the agent of Dr. Sanders—who had returned home immediately after surrendering the successful works into the hands of the referee—from which the following is an extract:—

"If you possibly could delay your experiment in New York, at the St. Nicholas, until you hear from Philadelphia as regards the best construction of retort, would it not be better?"

The question of successful gas making, as we see, had already passed away, as settled—the sole remaining one being that of the *kind of retort* that should be used. For Dr. Cresson, *that* had now become a most important one—the necessity for linking the fortunes of the unsuccessful retort which passes by his name, with the successful water gas, having become with each succeeding day more obvious to him.

Anxious to accomplish this, we find him, shortly after, *and without the approbation of either Dr. Sanders or his agent*, removing the retort that had been agreed upon, and substituting his own machine. Next (Oct. 9), we have a letter from Mr. Wiegand, *written at the instance of Dr. Cresson*, urging upon the agent the necessity of having, for the trial in New York, two of the patented machines, the *minimum* working capacity of which, in making water gas, may, as he is assured, be calculated at 350 feet per hour! This letter, be it observed, is written by the "skilled employé," who had directed the experiments at the city works, and addressed to the unfortunate man who had implored the assistance of the Messrs. Cresson, in the hope that their "greater practical knowledge" might enable them to bring the experiments to "a successful issue."

Months roll round, bringing with them great success in making gas, but no report. Complaining of this to Mr. Wiegand, Dr. Sanders' agent receives from him a letter, dated Feb. 6, 1859, from which the following is an extract:—

"You seem to think hard of Mr. Cresson for not reporting on gas, but, from the time you turned it over to him for the purpose of ascertaining its value as an illuminating gas, it has been prosecuted vigorously until now. You recollect that, after having demonstrated its practicability, which, I believe, was all you then desired to do, you turned it over to Mr. Cresson for examination, to discover its commercial value, or whether it could be made for thirty-five cents. That I think you did in my presence. Now, having transferred it, I think it would be becoming to wait Mr. C.'s pleasure quietly, it being a mere voluntary act on his part, and to be taken as a favor."

That our readers may properly appreciate the value of the several letters from Mr. Wiegand, we think it proper here to state, that he is now in charge of a gas works in the south, having obtained that situation at the instance of Professor Cresson.

The date of this last communication, as we see, is February, 1859—preceding by but a few days the visit of Professor Mapes, who spent portions of three successive days in the works, in constant communication with the Messrs. Cresson and others, without hearing from them a single word in reference to any failures on the part of either Dr. Sanders or his agent; and who closed his visit with a feeling of the expediency of *toning down*, in his report, the extravagant admiration of both the process and the product, expressed by "all the officials," including both of the Messrs. Cresson.

Where, now, shall we look for the "some weeks" spent by Dr. Sanders' agent at the city works, in successive failures, so admirably described by Professor Cresson? Not certainly in the fortnight that elapsed between the making of the arrangement and the letter of Dr. Cresson, of June 21, summoning him to this city to give directions! As certainly, not at the close of June, or the beginning of July, various letters received and sent, attesting his absence from the city, while the "skilled employés" of Professor Cresson were setting up the "apparatus!" As certainly not

in the middle of July, when, according to Mr. Wiegand, the process had been so successfully demonstrated, even in the brief period of work that preceded the accident to the retort! Not at the close of July, when Mr. W. was writing to inform him of the preparations for renewal of the retort. Not in the early part of August, when he was being summoned here to see to the renewal of the experiment! Not in the middle ef August, when he was handing over the successful apparatus to Professor Cresson! Not at the close of August, when he was in New York, arranging for its introduction there, on receipt of the report from here! Where, then, must we look for those unhappy weeks? Nowhere, as we think, but to the fertile imagination of Professor Cresson!

Having studied all these facts, your readers, Mr. Editor, can, as we think, arrive at but one conclusion—that conclusion being, that the whole of Professor Cresson's statement is one great fabrication, made for an improper purpose. What that purpose was, we shall proceed to show.

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY, *Monday, May* 21.

MR. EDITOR: If the Keystone Gas Company hope by means of slanderous epithets and imputations to deter me from the performance of the obvious duty in the exposure of the fallacious character of their estimates for cheap gas from water, they are doomed to disappointment, for it is my fixed purpose to lay open to the light of truth, as occasion may arise, every attempt to mislead or abuse the public mind on this subject, equally unmoved by their present denunciations as by their past attempts to conciliate by flattering words and gilded proffers.

The tardy publication of the paper so often held up by the Keystone Committee as the convincing document, which would prove an endorsement of Prof. Mapes' estimate of 37 cents per M for water gas, affords, at length, an opportunity of testing the accuracy of the deductions drawn by these gentlemen from the data claimed to be in their possession. I may remark that it would have been more just and fair towards the assistant engineer if the committee had complied with my request, that they should "publish verbatim" and distinctly the parts of this paper which they have so often claimed to possess in the *handwriting* of that officer; instead of mixing up, as they have done, his written memoranda with other matters not written by him. But the obscuration of facts arising from this unjustifiable mingling of fact and fancy may, perhaps, be avoided by referring to the key given in Prof. Mapes' last letter, in which he says, in speaking of the replies "in the handwriting of Dr. Cresson, and written at the request of his father:"

They were "from an evidently *official record then before him.*" And it is to be remarked that these words of Professor Mapes coincide with my own statements on this head, published in your paper of the 9th. In a paragraph which the Keystone Committee have curiously omitted to include in their professed quotation of my remarks on this subject, my language was as follows:—

"The statements pronounced by me as reliable, were those of the price of coke, and the quantity of coke and labor required to keep in action nine retorts for twenty-four hours; all which were derived from the *official records* of the Gas Works."

Thus you may perceive the Professor and I most happily agree in our recollection on this point. Bearing this fact in mind, let us examine the several replies, and see whether thirty-seven cents per M is the true deduction from the statements in the handwriting of Dr. Cresson.

The questions and replies set forth as from this paper are eleven in number: five of them are evidently not derived from the *official record*, as they relate to matters not there recorded. These are the 1st, 4th, 5th, 9th and 11th.

The other six relate to matters contained in the official records, and may have been taken from them in the manner described by Professor Mapes. These six answers are the 2d, 3d, 6th, 7th, 8th and 10th.

The 2d states the price of charcoal, but makes no mention of the quantity used.

The 3d states the quantity of gas made per day from wood in one cellular retort.

The 6th states the quantity of rosin required to make a thousand feet of gas, but says nothing of its cost, which is set down in the Professor's *estimate* at little more than half its actual amount.

The 7th states the equality in amount of fuel required for making coal gas and water gas, and is entirely ignored in the *estimate* said to be derived from it.

The 8th states the maximum quantity of gas yielded in twenty-four hours by three retorts, and the average quantity of fuel required to keep the three retorts in action. This answer is also entirely ignored in the *estimate*, where less than one-third the quantity here stated is assumed as the legitimate deduction.

The 10th answer states the number of men required for stoking and drawing and charging of retorts for twenty-four hours, and is entirely omitted from the *estimate*, indicating an opinion on the part of the *estimater* that the water-gas retorts might stoke and draw and charge themselves without human interference.

Returning now to the *estimate* put forth in the first letter of the Keystone Committee, as the legitimate results of these answers, we shall find that not one of the six items it contains has been derived entirely from these *official statistics*, and only one of them is derived or derivable from any of the five other answers, which are shown to be unofficial and mostly mere surmises or opinions.

The *quantity* of charcoal used in making water gas, and the cost of the rosin, the expense of steam, and of purification are not mentioned in these questions and answers, and consequently must have gotten into the *estimate* from some other source. The official statements given in the answers showing the actual quantity of fuel and labor for stoking and attendance on fires and retorts are entirely omitted from the *estimate;* and in place of them we find a supposititious and altogether insufficient quantity of fuel not shown in any of these answers, and the estimated cost of attending to the *rosin streams* given in the answer to the fifth question as a probable approximation to the cost of this single item.

Moreover both questions and answers and the reliable *estimate* omit

altogether not only the expenses for stoking and charging and drawing, but also the cost of renewals and repairs, and the many other important items of expense well known to the experienced gas manufacturer, and briefly enumerated in my statement published on the 11th of the month. The attentive reader may now form his own judgment of the accuracy and fairness of the reiterated intimations put forth by the Keystone Committee, that their published estimate of 37 cents per M was derived from a statement in their possession in the handwriting of the assistant engineer, and may also be able to decide how far Professor Mapes' "simple narrative flatly contradicts any part of my assertions."

I make no remark upon the curious and novel expedient of now introducing a third person as writing in behalf of Dr. Cresson in order to eke out the obvious insufficiency of his testimony to sustain their frequent assertions of its complete and effective character. That gentleman is fully competent to do all his own writing, and will cheerfully abide by any writing he has ever given. Neither will I pause to notice the new hypothesis of sundry supposititious frauds whose evident origin is in the teeming brain of their propounders, but will close by presenting a brief summary of the matters stated in my previous letters, that are now clearly established upon irrefragable evidence.

In the first place stands my statement of my refusal of an offer of a gratuitous interest in the patent, as one of the evidences that I was not in the employ of these patent speculators. The truth of this is attested by six highly respectable citizens, whose evidence abundantly outweighs the solemn affirmations put forth to the contrary by the Keystone Committee. Next their vain attempt to press a similar inducement upon the assistant engineer is exposed by the publication of their own authenticated record, given over the signature of their own officer. Thirdly, the foregoing analysis of their reliable *estimate*, and its collation with their oft vaunted statement, in the *handwriting* of the assistant engineer, shows the utter recklessness of their assertions, that the latter document sustains and corroborates the former. And finally, the annexed certificates show most conclusively the injustice and disingenuousness of their repeated and persistent assertions that a permit had been refused to the Girard House, and other impediments thrown in the way of the introduction of their gas into that establishment.

Yours, respectfully,

JOHN C. CRESSON,
Chief Engineer Philadelphia Gas Works.

May 22, 1860.

May 19, 1860.

FREDERICK FRALEY, Esq.

Dear Sir: I have never been refused, by the officers of the Gas Works, the usual permit issued to gas-fitters for making connections or alterations of gas fixtures at the Girard House. I applied for a permit on the 14th inst., and again on the 15th inst., on both of which occasions it was promptly issued.

Yours, respectfully, GODFREY KROUSE,
Gas-Fitter at Girard House.

In an article published in the *North American and United States Gazette* of the 18th instant, signed by Henry C. Carey, Marmaduke Moore, and A. Hart, it is stated "that the chairman of the committee has, himself, personally interfered to induce the proprietors not to introduce the water gas." The foregoing is entirely incorrect; no such interference has ever been made by Mr. Fraley, or any member of the committee of the trustees of the Philadelphia Gas Works.

Signed, PRESBURY, SYKES & CO.

Girard House, May 22, 1860.

THE GAS QUESTION.

No. VII.

Mr. Editor: In reply to Professor Cresson's letter of this morning we have to say:—

First. That having learned from Messrs. Presbury & Co. that we had over-estimated what had passed between them and Mr. Fraley, we at once stated the fact—doing this in our letter of Saturday last. That, in the face of this, the Professor should have deemed it necessary to ask, on Tuesday, for the letter he has now published, would seem to indicate some difficulty in making out a case for presentation to the public eye.

Second. That, had he applied to the engineer of Messrs. Presbury & Co., in whose hands the gas-fitter is but an instrument, he could have obtained a certificate that, at the very moment the letter was being printed in which the chairman was certifying to the promptitude of the officers of the company, Professor Cresson was, at the close of more than a month from the date of the first application, still insisting upon conditions with which the proprietors felt compelled, in justice to themselves, to refuse compliance. The man who produces secondary evidence, when primary is within his reach, does not thereby strengthen much his case.

Professor Cresson has given us a cloud of words, in proof that Professor Mapes had erred in his estimate of the cost of making gas from water. Whether he did so or not, is to us, at present, most unimportant—we having simply given the estimate as made by him, based on facts and figures that had been furnished at the works, the correctness of which had been assented to by the Engineer-in-chief. Our own entire accuracy is now certified to by Professor Mapes, who expresses himself as having been "more than surprised at the tone of Professor Cresson's remarks on the subject." Great as was his surprise, it will, as we think, be increased, when he reads the following in this day's letter:—

"In a paragraph which the Keystone Committee have curiously omitted to include in their professed quotation of my remarks on this subject, my language was as follows:—

"The statements pronounced by me as reliable, were those of the price of coke, and the quantity of work and labor required to keep in active service retorts for twenty-four hours, all of which were derived from the *official* records of the gas works."

Having read this, Professor M. will naturally seek to find the quotation we had made, and from which this paragraph had been so very "curiously omitted." Doing this, he will find the former to be an extract from Professor Cresson's first letter, while the latter, so "curiously" dropped out of it, occurs in his second—thus constituting another of those extraordinary operations that had so much surprised him. Having studied this portion of the present letter of Professor C., he will, as we think, be much more struck with the ingenuity of its arrangement than impressed with the strength of a cause that needs to be so defended—or the honesty of a man that resorts to such defence.

Thick as is the smoke that Professor Cresson has sought this day to raise, there are many things which may yet be plainly seen, a part of which may be thus enumerated:—

That, while questioning the accuracy of Professor Mapes' deductions

from the data furnished, he nowhere ventures to deny the accuracy of his statements as to his own activity, and that of his son, in furnishing them —"flatly contradicting," as they do, his previous assertion, that "he had declined to answer or criticize" the "interrogatories" the Professor had been led to put:

That he nowhere questions the accuracy of Professor M., when stating that "the workmen, and Mr. Gay, the engineer, all spoke in high terms of the superior quality of the light, and its entire evenness"—that "nothing was said of any 'unreliability' "—that "its beauty and strength were the theme of praise"—and that "indeed, prudence required that he should, in a measure, qualify the favorable opinions that seemed to prevail among all the officers at the city works:"

That he nowhere attempts to reconcile the statements then given to Professor Mapes with his *present* assertion of his declaration to Mr. Hart, that "the yield of gas was abundant, but its quality bad and uncertain:"

That he nowhere attempts to explain what was "the apparatus" sent to the city works by the agent of Dr. Sanders and "set up under his direction:"

That he nowhere attempts to show where we are to look for the "some weeks" that the agent "remained here" engaged in an attempt to manufacture gas, which "proved a failure:"

That he makes no attempt to reconcile the letter of Dr. Cresson announcing the receipt of the retort and the employment of the "skilled employés of the works in setting it up," with his own declaration that he had only consented to the interference of those "employés" after repeated failures of the agent:

That he does not question the genuineness of the letter of Mr. Weigand, his own engineer, describing the preparations for the second trial, and hoping that it may yield results as satisfactory as those which had been yielded by the first:

That he does not question the accuracy of Mr. Kempton's account of the perfect success of the process on the day previous to that on which the agent of Dr. Sanders was to deliver the works into his hands, in order that he might then commence his inquiries into the commercial value of the product:

That he does not deny the desire of Dr. Cresson to link the fortunes of the unsuccessful cellular retort with those of the successful water gas:

That he makes no attempt to question the accuracy of his own assistant engineer, Mr. Weigand, in the brief sketch of the successful operations of the agent of Dr. Sanders, given in his letter of February 9, 1859:

That, in short, he does not venture to question the accuracy of *any single fact* given by us in relation to the introduction of the Sanders process at the city works—*directly contradicting, as they do, every word that he has said upon the subject:*

That he nowhere attempts to question the accuracy of our exhibit of the ingenious manner in which "time tables" and "repair accounts" have been swelled, with a view to show that gas made from water is dearer than that made from wood or coal:

That he does not produce the "gentlemen of the Northern Liberties" who, as he would have us believe, were present at his "second interview" with Mr. Hart:

That he does not answer the question put to him by Mr. Moore: "why,"

having in his possession all the documents that he has published, "did he so lately give so much time and so many words to the effort to have the world believe that he had sought to obtain a false report?"

That he does not, even yet, enable us to know who are the "six respectable citizens" who furnish certificates to which they fear to append their names:

That he furnishes no information as to the extraordinary activity of those "highly repectable citizens" in producing the outside pressure required for closing the Wilmington and Northern Liberties Works against the water gas:

That, finally, he has nowhere shown how the parties who had contracted for the purchase of a commodity, conditioned that it should prove a good one, could be benefited by obtaining a false report favorable to the interests of the party from whom they had contracted to make the purchase. Until he shall do that, the production of certificates will avail but little, even though they have appended to them names in full, instead of the initials with which alone we have been thus far favored.

Has Professor Cresson no friend who will kindly open his eyes to the fact that with each successive letter he is involving himself in deeper difficulty? No one, as we think, can read his present one without seeing that it is merely an effort at evasion of the real questions in regard to which we are at issue.

Charged with a fabrication of the grossest kind, and that charge sustained by the clearest evidence, he devotes his time to an examination of the figures of Professor Mapes, based upon those of Dr. Cresson!

In conclusion, we beg to say, that each and every answer published by us as those of Dr. C. is in the handwriting of that gentleman.

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY, *Wednesday, May* 23.

THE GAS QUESTION.

No. VIII.

MR. EDITOR: "Why," it is asked, "if you can yourselves make gas, do you need a connection with the pipes of the city works?" The question is a natural one, and shall here be answered. The consumption of the Girard House, for certain hours of the day, is little short of 1000 feet an hour. The gas-holder, owing to the limited space that could be assigned to the works, is very small—its capacity being only 3000 feet, or about a three hours supply. Such being the case, it will, Mr. Editor, be obvious to your readers, that any stoppage for repairs would be likely to involve stoppage of the light. All machinery, however perfect, is liable to accident, and, to guard against this, private gas works are accustomed to continue in connection with the public one—the latter freely granting the permission, and relying upon the meter to tell the tale when public gas is used. This, and no more, is what has been asked of the officers of our city works. This it is, that has been for many weeks refused, except upon

such conditions as would place the house under their complete control, and *enable them to bring about that deprivation of light which is now required for proving the existence of the disease of "unreliability," so recently discovered by Professor Cresson.* That that, and nothing else, could have been his object, will be affirmed by any competent engineer, who will study his course of action from the day on which the proprietors of the house received the notice that every city meter should be removed as soon as the connection should be made, down to that on which the public were assured that "arrangements entirely satisfactory to Messrs. Presbury & Co." had been "promptly made"—that being the very time when the engineer of Messrs. Presbury & Co. was peremptorily refusing to permit the officers of the city works *to put chains and padlocks on their private works, and take possession of the keys.* In proof of this, we present the following letter :—

GIRARD HOUSE, PHILADELPHIA, May 21, 1860.

HENRY C. CAREY, Esq., President of the Keystone Gas Company. *Sir:* Your note of this morning is just received, and in reply I state that, on the morning of the 15th of May, Mr. Krouse's workman reported to me that he had received orders at the gas office to have the plugs of the stopcocks of the water-gas mains drilled, and to procure chains and padlocks for them, so that when the agent of the Gas Company came to turn on the gas, after the connections were made, he could lock them and take the keys. I told him I thought he had made some mistake, that his instructions must refer to the cocks in the service pipes belonging to the city. He said that he had not—that his instructions were very clear.

I asked him if he had received his permit; he said he had not. I told him that he must get it unaccompanied by such stipulations; that I would not permit any one to assume control of any part of the private works while I had them in charge.

I saw him about an hour afterwards; he informed me he had received the permit, agreeably to my instructions.

Yours respectfully,

JAMES E. PLACE.

Having compared this with the repeated assertions of non-interference made by Professor Cresson, the reader may now determine for himself how much credence is to be given to his statements on this or any other subject.

In the month of June, 1858, Professor Cresson accepted the post of referee, empowered to decide the question whether gas could or could not be made at a cost of thirty cents per thousand feet. As such he was bound, without unnecessary delay, to make decision, and so to make it as to enable both the parties to understand the facts developed, and clearly to understand their respective rights and duties. Since then, nearly two years have elapsed—no report having been, to the present hour, made by the referee. Why was it not promptly made? Why is it, that even now the parties know nothing beyond what is contained in the simple assertion of Professor Cresson, that water-gas is dearer than coal-gas—that assertion, too, contradicted by repeated statements made not only to Professor Mapes, but to many other persons? Was not the referee bound, if only in justice to himself, to pursue a fair, open, and manly course, such as should place him above the suspicion of being unduly influenced by either of the parties to the contract? Has he done this? If he has not, why has he failed to do so? Let us inquire.

As has been shown, the little and successful experimental "apparatus" was transferred to Prof. Cresson by the agent of Dr. Sanders, in the

month of August, 1858. Even then, the economy and success of the process had been both so clearly demonstrated, that a report was fully looked for in the succeeding month. Nevertheless it did not come. Week after week, and month after month, passed by—the much desired document meantime kept always dangling before their eyes, but just so distant that they could not clutch it. January at length arrived, bringing with it Professor Cresson's annual report, in which are noticed "experimental trials, attended by results of remarkable significance, promising commercial and social results of very great importance," as "the cheapening of the means of lighting would be measured by millions of dollars annually, and the benefits of this essential element of civilization would be vastly extended."

Still, however, the parties to the reference could obtain no report upon the cost of making the gas whose effects promised to be of such vast importance—a simple question that had already been almost, even if not quite settled on the 20th of August, when Dr. Cresson, through Mr. Wiegand, had commenced the discussion as to the *sort of retort* that could most advantageously be used in its production. February came, bringing with it expressions of high admiration, addressed to Professor Mapes, as to the simplicity and economy of the process, and the beauty of the light, but still there was no decision by the referee. Later, again, we find him suggesting the possibility that his decision may carry up the cost beyond the limited thirty cents, and that Dr. Sanders may be thus relieved from the performance of his contract, to guard against which a sliding scale is adopted, with his entire approbation. Month rolls on after month, until at length summer comes, bringing with it promises of a report, to be made at sixty cents; but, to this hour, the referee has made no report upon a question that was brought before him now nearly two years since—one of high importance to the parties to the reference—and one in regard to which, as we venture to affirm, there existed, in the minds of the Messrs. Cresson, in the month of September, 1858, not even the shadow of a doubt.

Why had the desired report been, even then, so long delayed? The answer to this question, as we think, will be found in the following facts:—

A patent stands recorded on the books of the patent office, in the name of Dr. Cresson, for a cellular retort, said to be very good for the manufacture of gas from wood, but of little value for the production of coal or water gas. Such being the case, a report in favor of the latter must prove injurious to the owner of that patent, unless he could, by some process, connect the retort and report together, *using his power over the production of the latter, for the promotion of the sale of the former.* Turning now to Mr. Wiegand's letter of August 28, we see that the question of the *kind of retort* best fitted for the production of the water gas, began to be agitated immediately after the success of the experiment had been established.

Shortly after, without consultation with either Dr. Sanders or his agent, the Cresson retort was substituted for that which had been already tried. Thenceforward, all parties were assured that that was *the only retort* in which water gas could be made for less than thirty cents. Dr. Sanders's agent was urged to introduce it at the New York works, and to him—now represented as having so utterly failed in his attempts at our city works—was granted an authority to sell the same at an enormous price. The answer uniformly given to the suggestions as to the necessity for its

purchase, was: "Prove to us that your retort is really *the only one* with which gas can be so cheaply made, and the money is ready for you." As no proof of this could be supplied, the parties declined to purchase. Anxious, in this stage of the affair, to conciliate the proprietor of the retort, the associates passed, Nov. 2, 1858, the resolution lately printed by Professor Cresson, by which they offered to pay "ten per cent. of any royalty they might receive for the use of Dr. Cresson's retort, in case it be used." This, however, did not satisfy the persons who controlled the decision of the question between the parties to the contract, desiring, as they did, that the retort and the report should go together. Of what passed subsequently, a correct idea may be obtained by a perusal of the following deposition of a well known gentleman of New York City:—

City and County of New York, ss.

Marcellus Eells, of said city, being duly sworn, deposes and says: That in the month of January, 1859, this deponent had an interview with Dr. C. M. Cresson, of the Philadelphia Gas Works, at the St. Nicholas Hotel, in this city, in relation to J. M. Sanders's process for manufacturing water-gas, under the patent of said Sanders. During that conversation, Dr. Cresson stated that his father, Professor John C. Cresson, of the Philadelphia Gas Works, had been examining and testing the Sanders process for several months, and that his father was prepared to report to the gentleman who had submitted the process to him. I asked him if it was a permanent gas. He said it was. I asked him at what cost it could be made. He said it could be made for (27c) twenty-seven cents per thousand feet; and that it was a better light than they could make from coal. I said that this was very satisfactory. He replied yes! but the gas could only be made in a retort of which he, Cresson, held the patent right. I replied, if that is the case it would be well that the same interest should own the gas and retort, and that it would be well to unite them in a Joint Stock Company, allowing him a proportion of stock, equal to the value of his retort. He said, no! he wished to sell his retort patent. I asked him how much he asked for it. He replied, $500,000. I said that is a large sum. He said he did not want the whole of the money, but would take securities for the most part of the amount. I asked him if he would sell the State of New York separate, and he said yes, at $150,000. I asked him if he would take part of this amount in stock; he said, no! I then told him that this looked as if he did not believe the gas valuable, and wanted to sell his retort. He replied, Oh! I assure you it is; and I will sell the retort, subject to my father and myself's establishing the fact, that it can be made for twenty-seven cents per thousand feet—that it is permanent, and a better gas than is now made from coal. I told him I thought he and his father were taking an unfair advantage of his having been selected as umpire between Mr. Sanders and the gentlemen proposing to purchase the patent right of Sanders, and that I could not be interested in the purchase of his retort on those terms, and would not advise any of my friends to accede to his proposition. He said that then, his father would not report upon the gas. About the month of October, 1859, I was in Philadelphia, and saw Dr. Cresson at his own house, and asked him if his father was intending to report upon the Sanders gas. He said his father was ready to report at any time, and if I would call upon his agent for the sale of his retort, I could make a very favorable arrangement for the purchase. This I declined, as experience had satisfied me that his retort was valueless for the water-gas. I asked him if he was satisfied with the permanency of the Sanders water-gas, and he said yes, he had some that he had kept a year, and it was a perfect gas, and he had burned some of it that day. I asked him what his father would now report the cost of the Sanders gas to be. He said he would report it as costing 60 cents per thousand feet. I said, "This is higher than you told me in New York." He said, yes; they had used it now more than a year, and they now added the expense of retorts, &c., which made the difference. I asked if he now considered Sanders' patent valuable. He said, "Yes, it is worth millions of dollars to the owners." During this last conversation, Dr. Cresson mentioned that he was receiving $1250 per year for his services at the Philadelphia City Gas Works, and that he had been offered $3000 per year to go elsewhere; but he remained, hoping

to have charge of competing gas works alongside of those in which he is now employed; and that, if he should succeed in having such charge, he would sell his gas to his consumers at the price the city paid as the cost of its gas, and then pay his stockholders 10 per cent. I thought at first that I had misunderstood him, and asked him if I had not. He said I had not, and again repeated the same declaration.

MARCELLUS EELLS.

Sworn before me, this 30th day of March, A. D. 1860.

LUCIUS PITKIN,
Commissioner for Pennsylvania in New York.

We now desire to express our firm belief that, had the retort been purchased, the report would have been promptly made.

Of those who may be disposed to doubt of this we now ask the consideration of the following questions:—

I. Has not Prof. Cresson recently sought to produce in the public mind a full belief that one of the parties to this contract had endeavored to corrupt him, a public officer, with a view to obtain a false report, by help of which to defraud their fellow citizens in the *sale* of a patent—doing this with a full knowledge that that party was only a conditional *purchaser*, and therefore most deeply interested in obtaining a true report?

II. Is not the dissemination of false reports, intended for the destruction of private character, more criminal than would be the sale of a true report upon the value of a commodity?

III. Might not the man who would do the first be regarded as fully capable of doing the last?

IV. Did not Professor Cresson, nearly two years since, accept the post of referee?

V. Has he ever, in the interval, even by his own showing, discharged the duties whose performance he thus assumed, thereby enabling the parties to this reference clearly to understand their respective rights and duties?

VI. Is it possible to assign any reason for failure in the performance of an imperious duty, whereby he might be placed in his present false position, more probable than that exhibited in the document above presented for consideration?

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY, *Wednesday, May* 24.

THE GAS QUESTION.

No. IX.

MR. EDITOR: Some three weeks since, Professor Cresson published several letters abounding in the grossest charges against the parties who had contracted with Dr. Sanders for the purchase of his patent—charges based upon a fabricated history, then given, of the proceedings at the City Gas Works, on the occasion of the introduction of the Sanders process, from which the following is an extract:—

"Permission to make the trial was given, the apparatus was sent to the gas works by an agent of Dr. Sanders, and set up under his direction; he remained here some weeks and made an attempt to manufacture gas, which proved a failure, the apparatus breaking down as soon as it began to yield any product. After a second trial, with no definite result, the parties interested asked whether I would consent to the erection and trial of a retort, under the direction of the skilled employés of the gas works, whose greater practical knowledge might give it a more successful issue; at the same time expressing an opinion that the cellular retort, then in use for making wood gas, would work better than that of Mr. Sanders."

This statement, as well as many others in which his name has been particularly referred to, was certainly sanctioned by the assistant engineer, Dr. C. M. Cresson. While doing this, however, that gentleman as certainly forgot that he had addressed a letter to this same agent, dated little more than a fortnight after the subject had been first introduced to the notice of Professor Cresson, by which it was shown, that the machinery came to the works in the absence of the agent from the city; that the skilled employés of the works forthwith commenced to set it up; that the object of the letter had been that of requesting the presence and directions of the agent; and that, therefore, it entirely contradicted the ingenious statement then being prepared for publication, and now for the second time placed before our readers. The letter itself is as follows:—

PHILADELPHIA, June 21, 1858.

DEAR SIR: The retort has just been received, and we are setting it with all dispatch. We would like to see you in reference to the connections for oil, &c., some time this week.

Very truly,
C. M. CRESSON, M. D.
Per W. S. BURRIS.

Dr. Cresson's memory having thus so entirely failed him in reference to the opening operations at the City Works, there is danger, as we fear, that it may now do so in regard to his conversations with Mr. Eells, and therefore do we request his perusal of the following letter, addressed to the agent of Dr. Sanders:—

PHILADELPHIA, Sept. 23, 1858.

JAMES E. BROWN, ESQ.—*Dear Sir:* I am directed by Dr. Cresson to say to you that in the event of your disposing of the patent right for his cellular gas retort, for the United States, for a sum not less than three hundred thousand dollars, he will allow in full payment of your services, expenses, etc., twenty-five per cent. upon the amount of the purchase; and in the event of your disposing of the said patent right for a greater sum, then, in addition to the twenty-five per cent. upon the sum of three hundred thousand dollars, he will allow a further commission of fifty per cent. upon any excess over that sum. Where the terms of sale agreed upon include part payment in stock, it is understood that your commissions, as above, are to be paid in stock in lieu of cash, and such commissions are to be considered as earned and payable when the sale is completed and the purchase money paid. Dr. Cresson reserves the right to terminate your agency in this matter upon giving you ten days' notice.

Yours very respectfully,
HENRY S. HAGERT,
Attorney for Dr. Cresson.

This letter, as we see, is about ninety days later in date than that of Dr. Cresson announcing the receipt of the machinery that had been ordered by Professor C.—about sixty days later than the first trial, which was cut short by the cracking of the retort—and little more than thirty

days later than the handing over of the successful apparatus to Professor Cresson, with a view to the commencement of his experiments.

Turning now to the above extract from Professor C.'s romance, we find this unskilled agent to have been "some weeks" engaged in making a first experiment—those trials closing with a total break down of "the apparatus." Repair of the apparatus being then followed by "a second trial, with no definite result," the unfortunate man casts himself upon the mercy of Professor C., imploring his aid in doing that which he himself has been quite unable to do—make water gas according to the Sanders process.

In this manner more than two months would certainly have been expended, had the Professor's statement been a true one. When, however, we turn our eyes from his letter to that of his son's attorney, we find that in little more than a month from the date of the successful operation described by Mr. Kempton, this unskilled person, of whom the Messrs. Cresson *now* speak so slightingly, had already attained the elevated post of *confidential agent of Dr. Cresson*, empowered to contract for the sale of his retort—and having in his pocket, too, a letter of Professor Cresson's engineer, Mr. Wiegand, written at the request of Dr. C., in which it is certified that its *minimum capacity* must be taken at three hundred and fifty feet per hour, or twice the usual product of a similar retort employed in producing gas from coal. This was, in point of fact, *almost* the report that had been asked for from Professor Cresson—the great economy of labor, and of costly materials, having already exhibited themselves in the most conclusive manner.

To whom, however, was this agent of Dr. Sanders, now become agent for Dr. Cresson, to make the sale? For an answer to this question, we may now turn with some advantage to the following extracts from another letter of Dr. Cresson's attorney, and particularly to the words that are underscored:—

April 23, 1859.—I regret that your negotiations did not result as Dr. C. was led to anticipate. Certainly nothing was left undone on his part to satisfy them of the value of his retort; and your own observation of its workings for a period of several months ought to have satisfied your New York friends, if they were really in earnest in desiring to purchase. * * * I infer from your returning the letter of attorney, that you have abandoned the effort to sell to *Moore and the others*, or for places outside of New York. I am unable to account for the apparent want of interest which you have lately displayed in a matter so obviously to your advantage; but of course you are master of your own actions, and we have no right to complain at your declining any further agency.

Respectfully yours, H. S. HAGERT,
Attorney for Dr. Cresson.

The commodity to be sold was a machine, the property of Dr. Cresson, certified by him to Dr. Sanders's agent as being *the only one in which gas could be made at less than thirty cents.* Experience has since shown that it is almost valueless for any purpose; but, as we see, it was hoped to close the eyes of Mr. Brown to its defects, by the offer of a commission varying between $75,000 and $175,000, as the price extorted *in payment for the report* might vary between $300,000 and $500,000. When speaking in his last letter of "gilded proffers," it is somewhat strange that Professor C. should so entirely have failed to recollect the magnificent one thus made by his assistant engineer.

Mr. Brown's own observation of its working "for several months"—of course in making the water gas—"ought," as we see, "to have satisfied

his New York friends" of the great value of the machine with which that gas had been produced. The sale, as we further see, was to be made to "Moore and the others"—the very parties who, according to Professor C., had been seeking to obtain, by means of bribery of his son and himself, a certificate in favor of a thing they had contracted to purchase, provided it should, on trial, prove to be a good one; but which, *as we are now assured*, had proved an entire failure. Such having been the case, what need could they have for a retort that was to cost the enormous sum of $300,000? Assuredly none; and yet the desire to make the sale to them was persisted in during a period of no less than seven months, until the agent, tired of the negotiation, returned the power of attorney to the hands from which it had been received! Perhaps, however, the experiments, notwithstanding the present assertions of Professor C., had *not* proved the failures they are *now* represented to have been. If they had not, we might then readily understand why "Moore and the others" —should continue to be teased into the purchase of the retort, as a condition precedent to the receipt of a report. To enable us to determine what were the real facts, we may here profitably turn to the following passage from a letter of Prof. C.'s engineer, Mr. Wiegand:—

PHILADELPHIA, Dec. 16, 1858.

"I had Mr. J. M., a Wall street broker, here this afternoon, to look at the gas. He was delighted with it, and said if I knew any sceptics in New York to refer them to him, and he would enlighten them."

Four days later, Dec. 20, we have another letter from Dr. Cresson's attorney, addressed to the unlucky agent of Dr. Sanders, who had so entirely failed in all his efforts at making gas, from which the following is an extract:—

"I called at the Girard House this morning, having failed to meet you at my office, with reference to the experiments at the St. Nicholas Hotel. Dr. Cresson is prepared to send on the fittings, &c., for yourself and your New York friend, and also a workman and superintendent to assist you. We think, however, that as these experiments are on your own and Mr. Sanders's accounts, and *to satisfy your New York people of the feasibilty of Dr. Sanders's process*, that Dr. C. ought not to be compelled to any outlay in the matter."

The "feasibility" of the "process" was thus to be established in New York by Dr. Cresson, some months after its entire impracticability had, *as we are now assured*, been so thoroughly demonstrated at the city works, by the Messrs. Cresson! Some days later we have another letter from the same person, in which he expresses, both for himself and his principal, much desire to witness the experiment of lighting up a great hotel—*by* the unskilled agent with whom Dr. C. had now connected himself—*with* "unreliable" gas, manufactured according to the *now* so much despised process of Dr. Sanders—and *in* those cellular retorts for the patent for which Dr. C. was then so anxious to obtain the trivial sum of $300,000!

JANUARY 3, 1859.

MR. J. E. BROWN.

DEAR SIR: I have been in hourly expectation of a communication from you in reply to my note of Saturday last (Jan. 1), but as yet have received no reply. As we have had further advices which lead us to conclude that the gas is ready for exhibition in New York, and that matters only await your presence, I would be obliged if you could let me see you at my office at 9½ A. M. to-morrow.

Very respectfully yours, H. S. HAGERT,
Attorney for C. M. Cresson.

The deficiency of memory that, throughout this transaction, has been manifested by the Messrs. Cresson, appears to us to be almost without a parallel. The man whose presence is here so anxiously awaited, is the identical person whose failures have been so admirably described in the recent romances given to the world over the signature of John C. Cresson.

In the picture there presented to us by the Professor, we see "Moore and the others" standing between the patentee and the referee, and seeking to bribe the latter into granting them a report, by aid of which they may be enabled to render themselves liable to pay $100,000 for a commodity that had proved to be entirely worthless. In the one presented by Dr. Cresson and his attorney, we see, in the foreground, Professor C. standing between the two parties to the contract, and holding up a report, Dr. C. meanwhile standing in the background, with one hand pointing to his retort as the instrument by means of which a report may be obtained—and with the other directing the attention of Dr. Sanders's agent to a huge *porte monnaie* on which is written—$75,000 to $175,000! Which of these is the most lifelike the reader will now determine for himself.

Having thus brought the history of this negotiation for the sale of the retort down to the date of the first interview described in the deposition of Mr. Eells, we have little doubt that Dr. Cresson will soon be enabled to recollect with considerable accuracy what passed on that occasion.

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY, *Wednesday, May* 30.

THE GAS QUESTION.

No. X.

Unable to face the accumulated and unanswerable evidence brought against him, Prof. Cresson abandons the field, and seeks refuge in silence, a fortnight having now elapsed since the entire demolition of his fanciful history, and since the production of the deposition of Mr. Eells, without having produced a word of answer.

Thus far our history has been limited to the first of the two years which have elapsed since the Sanders process was brought to the notice of Professor Cresson. Throughout the whole of that year Dr. Cresson was, in the words of his attorney, leaving "nothing undone" to satisfy "Moore and the others" of "the value of his retort," the purchase of which, by them, was held by him to be the condition precedent to their receipt of a report. With the closing of that year it became, however, obvious to the Messrs. Cresson, that the retort and the report could not be sold together, and henceforward, consequently, we find a total change in their course of operation.

Pending that negotiation, gas could certainly be produced *in the Cresson retort*, at "less than thirty cents." As the prospect of selling the retort gradually disappeared, the cost of producing water gas as regularly rose, until it had become more expensive than any other—proof of this being

presented to the Gas Committee of the Councils, in an exhibit of the actual operations of a little experimental work, in which a single small retort, capable of producing about two hundred feet per hour, is, as we have every reason to believe, charged with as much labor as was certified by Dr. Cresson to Professor Mapes to be required for ten of his own retorts, *the minimum capacity* of which he certified, through his own engineer, Mr. Wiegand, to be three hundred and fifty feet per hour each!

Pending the negotiation, the Sanders process was a success so perfect, that at the close of almost half a year Dr. Cresson undertook to demonstrate its "feasibility" to the anxious people of New York City. The negotiation ended, it came to be discovered that the process had proved a total failure; that it was little else than the old and rejected one of Mr. White; that no water gas had ever been made, &c. &c.—this new process of the Messrs. Cresson finally culminating in the remarkable fiction recently given to the world by Professor C. in the following words:—

"Permission to make the trial was given, the apparatus was sent to the gas works by an agent of Dr. Sanders, and set up under his direction; he remained here some weeks and made an attempt to manufacture gas, which proved a failure, the apparatus breaking down as soon as it began to yield any product. After a second trial, with no definite result, the parties interested asked whether I would consent to the erection and trial of a retort, under the direction of the skilled employés of the gas works, whose greater practical knowledge might give it a more successful issue; at the same time expressing an opinion that the cellular retort then in use for making wood gas, would work better than that of Mr. Sanders."

To all this, as we have seen, Dr. Cresson has given the lie direct, in the letter twice already placed before our readers. It is, however, no more false than any and every other portion of his father's historical romance.

Pending that negotiation, it was perfectly obvious to the Messrs. Cresson that the value of the report was dependent entirely upon their keeping complete control of the Sanders process. Therefore was it that, anxious as Dr. C. had been to witness the lighting up of the St. Nicholas, his anxiety wholly disappeared, from the moment that Mr. Eells refused to permit "Moore and the others" to be *black mailed* to the extent of $150,000, for the purchase of a worthless patent. From that moment everything was done to prevent further movement at the hotel, and to inspire its proprietor with doubt—the operation closing with the sudden disappearance of Dr. Cresson from the scene without a single word of explanation! The negotiation terminated, and the new system of decrying the process once entered upon, it became still more necessary to prevent trials elsewhere, as success in any place would prove the falsehood of the reports that had been circulated, just as success at the St. Nicholas would have relieved the parties of all necessity for waiting further for the report of Professor Cresson. With that view it was, that outside pressure was resorted to for the purpose of producing the order "not to permit a single foot of water gas to pass through the pipes" at Wilmington; that order, too, issued after "Moore and the others" had incurred heavy expenditure, in hopes of there obtaining the report so often promised, but never furnished by Professor Cresson. With that view, too, it was that the idea of "unreliability" was started, just as the Northern Liberties works were ready to commence the trial of the Sanders process.

First discovered at the close of a year and a half expended in "experi-

ments," it was at first described only as one of those "tricks" that, as is so well known, are incident to the manufacture of gases of every kind. Three weeks later, however, Professor C. had already found that the disease had extended itself from the place of production to that of consumption, and was heard assuring his friends that the adoption of the Sanders process by the N. L. Co., would be followed by deprivation of light for half of every week! Thus was produced that outside pressure which closed the works of the company to the water gas, to the extreme regret of intelligent and independent members of its board. Next, we have this operation repeated at the Girard House—the announcement of the intention of its proprietors to introduce the water gas, being followed by almost innumerable visits from friends of Professor Cresson, ready to risk large sums upon the assertion that the house would be in darkness for more than half the time! The works nearly completed, we find the Professor insisting upon terms of connection with the city pipes that, as he well knew, must have the effect of demonstrating the truth of all his assertions of "unreliability"—placing the private works, as, if accepted they would have done, under his own entire control. On each and every of these occasions our papers have been filled with false statements, emanating, as we have every reason to believe, from the city works, and intended to be copied into distant journals, with a view to prevent the possibility of any trial being elsewhere given to the Sanders process.

With what object, it may now be asked, have these things been done? How were the Messrs. Cresson to be benefited by shutting out the water gas? To this question the plain and simple answer is, that *the property in Dr. Sanders's discovery was, in this manner, to be wrested from him and transferred to Dr. Cresson.* To that end it was necessary to show that Dr. Sanders's agent had failed—that his "apparatus" had proved worthless—and that whatever had been done had been accomplished by Dr. C. Simultaneously with reports to that effect, Professor Cresson's closest friends were everywhere asserting that Dr. C. was about to take out a patent for remarkable discoveries that he had made—strangers who came to the city to inquire about the water gas, being cautioned to avoid it, because of the Sanders process being about to be superseded by that of Dr. Cresson.

In the performance of all these operations, and in the dissemination of all these false statements, the Professor has had the best assistance—his accomplices being found among those "respectable citizens" who have recently volunteered certificates in his favor, to which they have feared to append their names. Introduced by the Messrs. Cresson to an association with "Moore and the others," they assisted at the discussion of an offer of the charter of the Metropolitan Gas Company of New York; and then, without notice to their associates, bought it for themselves and other friends of the Messrs. C.—thereby, as we think, fully qualifying themselves for production on the stand as witnesses by Professor Cresson, the master spirit in all these operations.

Of those who read this paper, there may be some who will be disposed to doubt the possibility, that any man placed in the honorable and responsible position of referee could thus misuse the information given him for the destruction of the property of one of the parties to the reference. To all such, if any such there prove to be, we recommend a study of the history of the cellular retort, from the day of its introduction by its unfortunate inventors to the notice of Professor C., down to that on which

a patent was taken out to the name of Dr. Cresson. Among inventors, as we regret to say, our city works have a reputation that can scarcely be regarded as an enviable one. Had Dr. Sanders been fully informed upon this subject, he would, as we believe, have been as well disposed to submit his body to the "tender mercies" of a pack of hungry wolves, as the product of his brain to the "experiments" of the Messrs. Cresson.

The charges against Professor Cresson are—

I. That, having undertaken the office of referee, he has wholly failed to perform its duties, the parties to the reference having never yet obtained the information required for enabling them to understand their respective rights and duties:

II. That he has spared no effort to prevent them from obtaining elsewhere the information that he himself has refused to furnish:

III. That he has been prompted to this course of action by motives of the most discreditable kind:

IV. That while engaged in destroying the value of the property of one of the parties to the reference, he has assailed the characters of members of the other party—making charges against them that he knew to be destitute of even the shadow of foundation:

V. That, for the accomplishment of highly discreditable objects, he has published numerous statements that are wholly devoid of truth:

VI. That he has made "unreliable" reports to his employers—doing this with a view to promote his own private interests and those of his family and friends: and finally,

VII. That his conduct, throughout this transaction, has been such as is utterly unworthy of any person claiming to be recognized as a man of honor and a gentleman.

Here ends our task. It has been an unpleasant one, but it could not be avoided. If, in the course of its performance, we have done Professor Cresson any injustice, we desire that he may have instant remedy, and with that view, now propose to him to leave the decision of the question to three or five of his brother members of the Board of the Western Saving Fund, to be chosen in the manner usual on such occasions, and in all cases to embrace those who may be supposed least liable to any bias in favor of either of the parties. Deeming it, however, highly probable that those gentlemen might be unwilling to undertake the delicate task, and anxious that the Professor should experience no delay, we propose, as preferable, to look for referees to the Board of the Philadelphia Saving Fund Society, remarkable as it is for the elevated character of the gentlemen of whom it is composed. As the questions to be decided are important to the public as well as to individuals, we can scarcely doubt their readiness to give the little time that, as it appears to us, would be required for their examination. Having seen the evidence and decided the question as to where lies the fault, it will be for them to decide the mode and measure of reparation; and we now, in advance, accept their verdict. Will, or rather dare, Professor Cresson do the same?

HENRY C. CAREY,
MARMADUKE MOORE,
A. HART,
Committee.

OFFICE OF THE KEYSTONE GAS COMPANY, *Thursday, June* 7.

NOTICES OF THE SANDERS WATER GAS AT THE GIRARD HOUSE.

From the North American and United States Gazette, July 31.

THE WATER GAS.—*A Brilliant Light at the Girard House.*—Yesterday evening a number of gentlemen assembled at the Girard House for the purpose of seeing the effect of water gas, with which a portion of that famed hotel is now lighted, the gasometer and works having been erected in a very convenient form on the premises. The furnaces and machinery, indeed, are quite curious, and as being in this instance the very fountain of light, from which a very brilliant, pure and intense illuminating power is eliminated, we naturally mention them as very successful specimens of skill and science, forming an *ensemble* of productive effulgence that is alike creditable to the inventor and the manufacturer.

But what are the results? We reply that they fully equal, if they do not even surpass the reasonable though sanguine expectations of the "Keystone Gas Co."—such being the title of the association under whose auspices the water gas has been introduced in this city. Our readers ought to be informed that this gas is generated from water and rosin, and as the vapor produced by these passes over a bed of burning charcoal, a portion of the carbon is taken up. Forty pounds of rosin are used to every thousand feet of gas, the quantity of charcoal being very small. Then the company, when they first lighted up their burners, might have been supposed to have said (we mean no irreverence), *sit lux, et lux fuit!* Of seven sections for lighting the Girard House, five are now supplied with the water gas. In fact, there were three hundred burners in full action last night, and we had an ample opportunity of observing their effect, both within the glass globes of chandeliers, and with the flame exposed to the open air.

These lights were commenced three weeks ago. Some days elapsed before the tar produced by the coal gas was cleared out of the pipes; and now we have this wonderous discovery, the water gas, in all its glory, diffusing light and cheerfulness everywhere around.

Its influence extends far and wide, for the brightness is of a white, clear, pure, and penetrating character, before which even distant darkness flies away. One great advantage, too, is its cheapness, the price being much less than that of the gas made from bituminous coal. Dr. Sanders is both the inventor and patentee, and the economy incident to his process is derivable:—

1. From the superior productive power of retorts used in the manufacture of Sanders's gas. The aggregate cubical capacity of the three retorts erected at the Girard House is but two-thirds of the capacity of one ordinary coal gas retort. The usual product of a coal gas retort is less than 200 feet per hour; the water gas retorts yield with ease 800 feet per

hour, indicating in favor of Sanders's process a facility of production five-fold as great as from coal by the usual method.

2. From the decreased proportion of *labor*. One man can manage more than twice as many retorts making Sanders's gas as he can those producing gas from coal.

3. From the decreased *capital* required in original construction, and *interest* thereon accruing.

4. From the decreased cost of gas *material*. The coal gas in common use is a mixture of various gases and vapors of different qualities, ninety per cent. of which produces no light directly, but the presence of which is necessary to maintain the other ten per cent. in a light-giving condition. Instead of destroying costly coal to obtain this large proportion of non-illuminating material, Sanders's process finds the elements it needs in inexpensive charcoal and water, deriving its quality of illumination from any form of hydro-carbonaceous matter, such as rosin, tar, or cannel coal. In the manufacture of illuminating gas from rosin, a pound of that material usually yields from 6 to 7 feet; in Sanders's process but a pound is used in 30 to 40 feet.

Favorably as the cost of Sanders's gas contrasts with the cost of coal gas in this city, where gas coal is cheap and abundant, its economy rises into still more impressive proportions in localities destitute of gas coal and defective in means of transportation. Many parts of this country and much of Europe, are thus restricted, and consequently taxed excessively for artificial light.

A reduction of four-fifths in cost of material, transportation and labor, will doubtless secure its introduction to many regions now but partially supplied with this great agent of social progress, enlightenment and comfort.

At the Girard House, the confined space allotted to the gasometer limits the supply of water gas to the house to about three hours' demand, compelling the establishment to depend upon the city for gas, in the event of repairs to the private works being needed. The city gasometers are so large, that an entire stoppage for several days of manufacture at the city works would be unknown to the citizens.

While we were writing this paragraph the bar-room was lighted up, there being several handsome chandeliers in full blaze, and the effect was certainly gorgeous and dazzling. The Directors are, Messrs. Henry C. Carey, President; Abraham Hart, Marmaduke Moore, and James G. Clark. We congratulate these gentlemen on the success which has crowned their bold efforts and public spirit, and we cordially wish them such appreciation and remuneration as their enterprise so amply merits.

From the Public Ledger.

Water Gas.—Last evening a number of gentlemen assembled at the Girard House to examine the quality of the water gas, with which a large portion of the house is now furnished. The holder and works are in the rear of the house. The holder will contain about 3000 feet, which is supplied from three retorts, erected in the engine room, immediately below the holder. The Girard House is divided into seven sections for lighting, two of which are supplied from the city gas works, the other sections are now lit by water gas. The quality of the gas appears to be good, giving

a strong and brilliant light, and so far has given great satisfaction to the proprietors of the Girard House. Those interested in its manufacture state that the actual cost of its manufacture, exclusive of labor, wear and tear of retorts, &c., will not exceed 28 cents per 1000 feet. Forty pounds of rosin, worth about half a cent per pound, is used in the production of 1000 feet, while the lime for purifying, and charcoal, will not cost over 6 cents per 1000 feet. It is also stated that one man can attend to ten retorts, and that each retort will produce 250 feet per hour. The exact cost of the water gas now used at the Girard House could not be ascertained, as the labor is not charged, those making it being the regular employés of the hotel.

From the Sunday Dispatch.

Water Gas at the Girard House.—For a month past the manufacture of water gas at the Girard House has been continuously successful, to the great satisfaction of parties interested, and to the entire conviction of every one who has witnessed the simplicity, economy and brilliancy of Prof. Sanders's invention. On Monday evening last the operations at the hotel were thrown open to the press and public, under the auspices of the Keystone Gas Company, of which our distinguished townsman, Henry C. Carey, Esq , is President. A company of gentlemen, editors and capitalists, assembled to inspect the machinery and the results produced. The verdict of general approval and gratification was without dissent. The gentlemen of the Water Gas Company have, in their recent public controversy with the city gas officials, and in their present practical demonstration, vindicated their moral and scientific position in this important matter of cheap light. Why, we ask, are not steps at once taken to impart the benefits of this invention to the whole community? Are we to be forever under tribute to sustain private and selfish purposes in every department of public administration?

From N. Y. Tribune.

It is now believed that the water gas of Dr. Sanders will realize all the results, both practical and economical, which its friends have claimed for it from the beginning. Why the inventor was so long in convincing the public of its superior merit has always been a mystery. But during all this time, if the public were not convinced, the parties immediately interested have been abundantly satisfied, and there is little doubt that the general public will very soon share the enthusiasm they entertain. It is certain that nothing less than the most sinister influences prevailing in quarters where one would least expect it, have alone prevented this great invention from being now in use in thousands of houses here. The Girard House has for several weeks been partially lighted with the water gas made on the premises. The works consist of three retorts, and a holder large enough to contain only 3000 cubic feet. The daily consumption of the Girard is 7000 feet, the price from the city works being $2 50. The water gas was first introduced into the bar-room, where it has given entire satisfaction, and is being gradually introduced all through the building; any one may see it burning any evening he may call. The proprietors of the Girard are fully satisfied with the trial thus far made. It has been demonstrated that this gas can be produced at 40 cents per 1000 cubic

feet. I am told that San Francisco is probably lighted by it by this time, as steps preparatory thereto were taken some months ago. The hostile causes which kept this great invention in the back ground will in due time be made public, when the mystery which staggered the faith of capitalists and lookers on will be entirely dissipated, and the hitherto unsuspected purity of some functionaries will be seriously compromised. I have seen this gas burning nightly at the Girard. I have been many times in the works, where everything is thrown open to public inspection, and where polite superintendents will answer you a thousand questions. All that I see and hear convinces me that this discovery is a reality. I have, therefore, little doubt that coal gas has seen its brightest days, and that in the coming five years a new era will be inaugurated by which consumers will get their light at half the present prices.

From the Evening Bulletin, July 31.

Water Gas Tested.—The western wing of the Girard House, comprising the whole of the four-story part, extending from the original building to Ninth Street, is now entirely lighted with water gas, manufactured on the premises, according to Dr. Sanders's process. The works are necessarily on a small scale, but if there was room to erect a receiver, they could produce sufficient gas to light several blocks of houses. They have been in operation between two and three weeks, during all which time the supply of gas has been abundant and continuous, and the quality is surpassingly fine. A more brilliant light than that seen every evening, from the burners supplied from this source, could not be desired.

The materials used in making this gas are water, rosin, and charcoal. The proprietors of the Girard House are already satisfied that it costs much less than the gas furnished from the city works, and the Keystone Gas Company, by whom the works were erected, are confident that when made on a large scale, the cost will be very much reduced. In fact they promise that if they can get the privilege, they will supply Philadelphia with gas at such a low figure, as to make large consumers long for the day when Sanders's gas shall be introduced. The experiment at the Girard House must remove all scepticism as to the production of a very fine gas by Dr. Sanders's process. If it can be demonstrated to the community that it costs less than that now used, they will insist on its being furnished to them. The demonstration to the proprietors of the Girard House seems to be entirely satisfactory, and their testimony should be sufficient.

From the Press, Aug. 5.

Girard House, Water Gas.—On Monday night a large party, consisting of business men and the editorial corps, attended at the Girard House, by invitation, to witness the result of the manufacture and introduction of water gas, at a cost of not more than fifty cents a thousand feet. The manufactory containing three retorts has been fitted up in the rear of the hotel, and the process of production is now attended by some of the regular employés of the house. Monday three weeks the water gas was first lighted in the hotel. Five out of seven sections of the hotel are now supplied with water gas, the number of lights now burning every night are three hundred. The gas is pure, white, and inodorous, and very bril-

liant in combustion. It is burned, not in the ordinary jets, but in double split burners, and every one was gratified at the purity, steadiness, and intensity of the light. In the bar-room, which has chandeliers as well as side-lights, the latter alone were used in the early part of the evening, and gave as great an illumination as has usually been witnessed from all the burners with the ordinary gas. When the water gas was turned on into the chandeliers and side-lights, the effect was remarkably brilliant, and gave great satisfaction to the beholders.

The gas is the product of rosin and water. The reservoir at the Girard House contains three thousand feet of water gas, which has to be renewed once during the course of the evening. The peculiar merit is pure light produced with a minimum of labor, and in this city at five-sixths of the cost of the ordinary consumption. It is made under the patent of Dr. Sanders, of Cincinnati, the inventor. The trustees of the Keystone Gas Company were present, viz: Henry C. Carey, Esq., Marmaduke Moore, Esq., J. G. Clark, Esq., and Abraham Hart. These gentlemen were warmly congratulated on the success of the experiment which they have prosecuted with such boldness and perseverance, and in the teeth of much opposition and very adverse circumstances.